

U-matic

VIDEO CASSETTE PLAYER

VP-7000



SONY
SERVICE MANUAL

SPECIFICATIONS

System

Video recording	Rotary 2-head helical scan
Luminance	FM recording
Color signal	Down-converted subcarrier recording
Video signal system	EIA standard, NTSC color standard

Video

Output	
VIDEO OUT	BNC type ×1 1.0 Vp-p ±0.2 Vp-p, 75 ohms, unbalanced, negative sync
TV	8-pin type ×1
Sync	
SYNC IN	BNC type × 1 2.5 V (1 – 5 V) p-p, 75 Ω, unbalanced, negative sync
Horizontal resolution	240 lines
Signal-to-noise ratio	More than 45 dB

Audio

Output	
LINE OUT CH-1, CH-2	RCA type phono jack ×2 –5 dB (47 k-ohm load)
AUDIO MONITOR	
	RCA type phono jack ×1 –5 dB (47 k-ohm load)
TV	8-pin type ×1
Signal-to-noise ratio	More than 48 dB (THD 3%, reference level, channels 1 and 2)
Frequency response	50 – 15,000 Hz (channels 1 and 2)

Special functions

Pause	Still picture, with automatic long pause function
Search	About 5 times normal speed in both directions
Tracking control	Possible
Skew control	Possible
Dropout compensator	Built-in

Tape transport

Tape speed	95.3 mm/sec (3¾ inches)
Playback time	Approx. 60 min (with KCA-60K)
Fast forward, rewind time	Within 4 min (with KCA-60K)
Wow-and-flutter	Less than 0.18% rms
Tape format	U-matic video cassette
Tape type	KCA, KCS, KSP cassette

General

Power requirements	90 – 132 V AC, 48 – 64 Hz
Power consumption	58 W (main unit only)
Operating position	Horizontal
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Operating temperature	5°C to 40°C (41°F to 104°F)
Dimensions	Approx. 424 × 192 × 492 mm (w/h/d) (16¾ × 7⅞ × 19⅞ inches)
Weight	Approx. 16 kg (35 lb 4 oz)
Supplied accessory	RF modulator compartment cover (1)

Recommended Video Equipment and Accessories

Frame Code Generator FCG-700
Color video monitor Sony CVM, PVM series
Computer Interface Board BKU-701
Remote control unit RM-690, RM-500, RM-580
Auto Search Control Unit RX-707, RX-353, RX-303
Video/audio distributor DA-500
Video/audio switcher VCS-500
VTR selector RM-V5
RF modulator kit RFK-634
Cleaning cassette KC-1C
Rack mount kit RMM-507

TABLE OF CONTENTS

1. GENERAL DESCRIPTION

1-1.	Features	1-1
1-2.	Location of Parts and Controls	1-3
1-3.	Connection	1-7
1-3-1.	Connection to a Video Monitor	1-7
1-3-2.	Connection to an Audio/Video System ...	1-7
1-3-3.	Connection to a TV Set	1-8
1-3-4.	Connection to a Timer Playback	1-8
1-4.	Installing the RF Modulator	1-9
1-5.	Operation	1-9

2. SERVICE INFORMATION

2-1.	Removal of Cabinet	2-1
2-2.	How to Service the Printed Circuit Board	2-3
2-2-1.	VA-57 Board	2-3
2-2-2.	PD-40A Board	2-3
2-2-3.	IF-132 Board	2-3
2-3.	Main Parts Location	2-5
2-3-1.	Location of the Printed Circuit Board	2-5
2-3-2.	Location of the Mechanical Main Parts/Components	2-7
2-4.	Printed Circuit Board	2-9
2-5.	Connectors	2-9
2-6.	Output Signal of the Connector	2-9
2-7.	Spare Parts	2-10
2-8.	Select Switch Setting	2-10
2-9.	How to Operate the Machine without Installing a Cassette Tape	2-10
2-10.	Cassette Removal Procedure when Normal Ejection is not Possible	2-11
2-11.	Diagnostic Function in System Controller	2-12
2-11-1.	Outline of Self Diagnosis	2-12
2-11-2.	Diagnosis Method	2-12
2-11-3.	Troubleshooting	2-13
2-11-4.	Diagnosis List	2-14
2-11-5.	Mode Conversion Diagram and Timing Chart	2-18
2-12.	Safety Check-out	2-35
2-13.	Fixture	2-35

3. PERIODIC CHECK AND MAINTENANCE

3-1.	Maintenance after Repairs	3-1
3-2.	Periodic Check	3-1
3-3.	Others	3-1

4. REPLACEMENT OF MAJOR PARTS

4-1.	Replacement of the Upper Drum	4-1
4-2.	Replacement of the Drum Assembly	4-2
4-3.	Replacement of the Capstan Motor	4-3
4-4.	Replacement of the CTL Head	4-3
4-5.	Replacement of the S Drawer Roller	4-4
4-6.	Replacement/Adjustment of the Tape Guides on the Threading Ring	4-5
4-7.	Replacement of the Audio/CTL Head	4-6
4-8.	Replacement of the Threading Ring	4-7
4-9.	Replacement of the Pinch Roller	4-8
4-10.	Replacement of the Threading Gear Box System	4-8
4-10-1.	Replacement of the Threading Gear Box	4-8
4-10-2.	Replacement of the Threading Motor	4-9
4-10-3.	Replacement of the Threading Belt	4-10
4-11.	Items to be Adjusted after Main Parts Replacement	4-11

5. LINK AND DRIVE SYSTEM ALIGNMENT

5-1.	Reel Table System Adjustment	5-1
5-1-1.	Cassette Holder Position Adjustment	5-1
5-1-2.	Reel Table Height and Vertical Play Adjustment	5-2
5-2.	T Drawer Arm Adjustment	5-4
5-2-1.	T Drawer Arm Eject Position Adjustment	5-4
5-2-2.	Unthread-end Switch Position Adjustment	5-4
5-3.	Threading System Adjustment	5-5
5-3-1.	Threading Ring Rotation Adjustment	5-5
5-3-2.	Gear Box Installing Position Adjustment	5-6
5-3-3.	Pinch Roller Self Alignment Adjustment	5-7
5-3-4.	FR Detector Block Installing Position Adjustment	5-8
5-4.	Pinch Lever Block Adjustment	5-9
5-4-1.	Pinch Lever Preset Adjustment	5-9
5-4-2.	Pinch Roller Preset Adjustment	5-10
5-4-3.	Pinch Solenoid Block Position Adjustment	5-11
5-5.	T Tape Sensor Position Adjustment	5-12
5-6.	Tension Arm System Adjustment	5-13
5-6-1.	S Drawer Roller Block Limiter Adjustment	5-13
5-6-2.	T Tension Regulator Operating Position Adjustment	5-13
5-6-3.	S Tension Regulator Operating Position Adjustment	5-14
5-6-4.	Tension Detector Position Adjustment	5-15
5-6-5.	T Tension Regulator Arm Height Adjustment	5-16
5-7.	Search Solenoid System Adjustment	5-17
5-7-1.	Search Solenoid Installing Position Adjustment	5-17
5-7-2.	T Idler Solenoid Position Adjustment	5-18
5-7-3.	S Idler Solenoid Position Adjustment	5-19
5-7-4.	Pinch Solenoid Installing Position Adjustment	5-20
5-7-5.	T Brake Solenoid Position Adjustment ...	5-21
5-7-6.	S Brake Solenoid Position Adjustment ...	5-22
5-8.	Cassette-up Compartment Adjustment	5-23
5-8-1.	Cassette-in Switch Position Adjustment	5-23
5-8-2.	Cassette-down Switch Position Adjustment	5-24
5-9.	Leaf Spring Position Adjustment	5-25

6. BACK TENSION AND TORQUE ALIGNMENT

6-1.	Brake System Adjustment	6-1
6-1-1.	S Brake Torque Adjustment	6-1
6-1-2.	T Brake Torque Adjustment	6-2
6-1-3.	REW Brake Torque Adjustment	6-3
6-2.	F FWD/REW Torque Adjustment	6-4
6-3.	FWD Torque Adjustment	6-5
6-4.	REV Torque Adjustment	6-6
6-5.	F FWD Back Tension Adjustment	6-7
6-6.	FWD Back Tension Adjustment	6-8

7. TAPE RUN ALIGNMENT

7-1.	F FWD/REW Modes Tape Path Adjustment	7-1
7-2.	T Correction Guide Slantness Adjustment	7-2
7-3.	PLAY Mode Tape Path Adjustment (1)	7-2
7-4.	PLAY Mode Tape Path Adjustment (2)	7-3
7-5.	REV Mode Tape Path Adjustment	7-4
7-6.	Tape Path Adjustment Around Pinch Roller	7-5
7-7.	Tracking Adjustment	7-6
7-7-1.	Video Tracking Adjustment	7-6
7-7-2.	CTL PB Head Height/Azimuth/Zenith Adjustments	7-10
7-7-3.	Audio Head Height Adjustment	7-12
7-7-4.	Audio Head Zenith Adjustment	7-13
7-7-5.	Audio Head Azimuth Adjustment	7-13
7-7-6.	Audio Head Phase Adjustment	7-14
7-7-7.	Audio/CTL Head Position Adjustment	7-14
7-8.	Video Head Dihedral Adjustment	7-15

8. POWER SUPPLY/SYSTEM CONTROL ALIGNMENT

8-1.	Switching Regulator Adjustment	8-1
8-1-1.	REG + 12 V Adjustment	8-1
8-2.	Tape Sensor Balance Adjustment	8-2
8-3.	Reel Motor Still Adjustment	8-2

9. SERVO SYSTEM ALIGNMENT

9-1.	CTL Head Position Adjustment	9-2
9-2.	Capstan Free Speed Adjustment	9-2
9-3.	Capstan Search Speed Adjustment	9-2
9-4.	Capstan Stop Servo Adjustment (1)	9-3
9-5.	Capstan FWD/REV Detection Adjustment	9-3
9-6.	Capstan Stop Servo Adjustment (2)	9-4
9-7.	Tracking Multi Adjustment	9-4
9-8.	Drum Free Speed Adjustment	9-5
9-9.	Drum AFC Level Adjustment	9-5
9-10.	Drum AFC Transient Adjustment	9-5
9-11.	Instant Start Adjustment	9-6
9-12.	Switching Position Adjustment	9-6

10. AUDIO SYSTEM ALIGNMENT

10-1.	Audio Head Position Adjustment	10-2
10-2.	Audio Playback Frequency Response Adjustment	10-2
10-3.	Audio Playback Output Level Adjustment	10-2

11. VIDEO SYSTEM ALIGNMENT

11-1.	Noise Canceller Adjustment	11-2
11-2.	High Component Mix Adjustment	11-3
11-3.	RF Frequency Response Adjustment	11-4
11-4.	Dropout Compensation Sensitivity Adjustment	11-4
11-5.	RF Balance/Level Adjustment	11-5
11-6.	Chroma Demodulator Adjustment	11-5
11-6-1.	Reference 3.58 MHz Adjustment	11-5
11-6-2.	ACC Level Preset	11-6
11-6-3.	VCO DC Level Adjustment	11-6
11-6-4.	APC Gain Adjustment	11-6
11-6-5.	4.27 MHz Tuning Adjustment	11-6
11-6-6.	ACC Level Adjustment	11-7
11-6-7.	Converter Balance Adjustment	11-7
11-6-8.	Y Output Level Adjustment	11-8
11-6-9.	Chroma Mix Level Adjustment	11-8
11-6-10.	Video Level Adjustment for BKU-701	11-8

12. BLOCK DIAGRAM

Overall	12-1
Video System	12-4
Audio System	12-7
Servo System	12-9
System Control	12-11

13. SEMICONDUCTOR ELECTRODES 13-1

14. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Circuit Function of the Printed Circuit Board	14-1
Location of the Printed Circuit Board	14-2
VA-57	14-5
SV-93B	14-22
KY-105B	14-44
SY-106B	14-68
IF-132	14-104
PD-40A	14-114
PH-5, PTC-35	14-116
PD-41	14-117
PTC-35, RM-39, SE-46, TG-22	14-119
CC-31, CC-32, CC-33, LP-41	14-120
DC-31B	14-123
UR-14	14-125
FRAME	14-130

15. SPARE PARTS AND FIXTURE

15-1.	Parts Information	15-1
15-2.	Exploded View	15-1
	Reel Chassis (1), Supply Side	15-3
	Reel Chassis (2), Take-up Side	15-5
	Reel Chassis (3), Back Side	15-7
	Threading Ring Block	15-9
	Threading Arm	15-11
	Drum and Capstan Blocks	15-13
	Erase Head Base	15-15
	Pinch Lever and Pinch Solenoid Blocks	15-17
	Cassette-up Compartment Block	15-19
	Function Control	15-21
	Front Panel Block	15-23
	Chassis Block (1), Left Side	15-25
	Chassis Block (2), Back Side	15-27
	Level Control Panel	15-29
	Switching Regulator	15-31
	Connector Panel	15-33
	Chassis Block (3), Bottom	15-35
	Ornamental Panel Block	15-37
15-3.	Electrical Parts List	15-39
15-4.	Packing Material and Accessories	15-58
15-5.	Fixture	15-58

SECTION 1

GENERAL DESCRIPTION

1-1. FEATURES

Compact, lightweight design

Many versatile features are provided in a compact, lightweight package. Thanks to its small footprint, the VP-7000 can be set up almost everywhere and rack installation is easily possible.

Programmed operation

Any desired point on the tape can be quickly located. A specific section may be played back repeatedly.

RS-232C interface option

The optional BKU-701 computer interface board offers an RS-232C link that can be used for example to operate the player by connecting the RX-707 auto search control unit or other devices equipped with an RS-232C interface.

LED counter shows tape position

The tape counter uses the CTL signal on the tape for precise playing time indication in minutes and seconds. If the optional BKU-701 computer interface board is installed and the tape contains frame code (absolute address) information, this information can be used to display the tape position.

Other features

- . Search in both directions at about 5 times normal speed.
- . Long pause function for tape protection.
- . AUTO OFF indicator shows moisture condensation.
- . Overall easy operation.

1-2. LOCATION OF PARTS AND CONTROLS
FRONT PANEL

Cassette holder

TRACKING control
Normally, set this control to the center (FIXED) position.

AUDIO MONITOR selector
Selects the audio channel for video monitoring. The setting does not affect the audio outputs of the LINE OUT jacks.

CH-1	Sound of channel 1 only
MIX	Mixed sound of channels 1 and 2
CH-2	Sound of channel 2 only

Indicators

AUTO OFF	Lights to indicate internal moisture condensation.
STANDBY	Lights while tape is being threaded or unthreaded.
FRAME CODE	Lights when a tape on which frame code has been recorded is played back with a BKU-701 attached to the unit.

Tape operation buttons and indicators

EJECT ▲
STOP ■
REW ◀◀ (rewind)
PLAY ▶▶ (playback)
F. FWD ▶▶▶ (fast forward)
PAUSE ||

SEARCH buttons and indicators

REV ⏮ (Search in reverse direction)
FWD ⏭ (Search in forward direction)

PROGRAMMED OPERATION selector

	For repeatedly playing and for checking point memorized by the MARK IN A and B button.
OFF	For normal playback. For memorizing the points on the MARK IN A and B button.
	To stop the tape at the point where the MARK IN A button was pressed. If nothing is stored on the MARK, the time counter 00:00 position is located.

MARK IN A, B buttons
By pressing a button, the counter indication at that point is stored in memory. When a button was pressed repeatedly, the last point is stored.

SKEW lever
Normally, set this lever to the center position.

POWER switch

TIMER switch
Except when wishing to activate playback with an external timer, this switch should be set to OFF.

RESET button

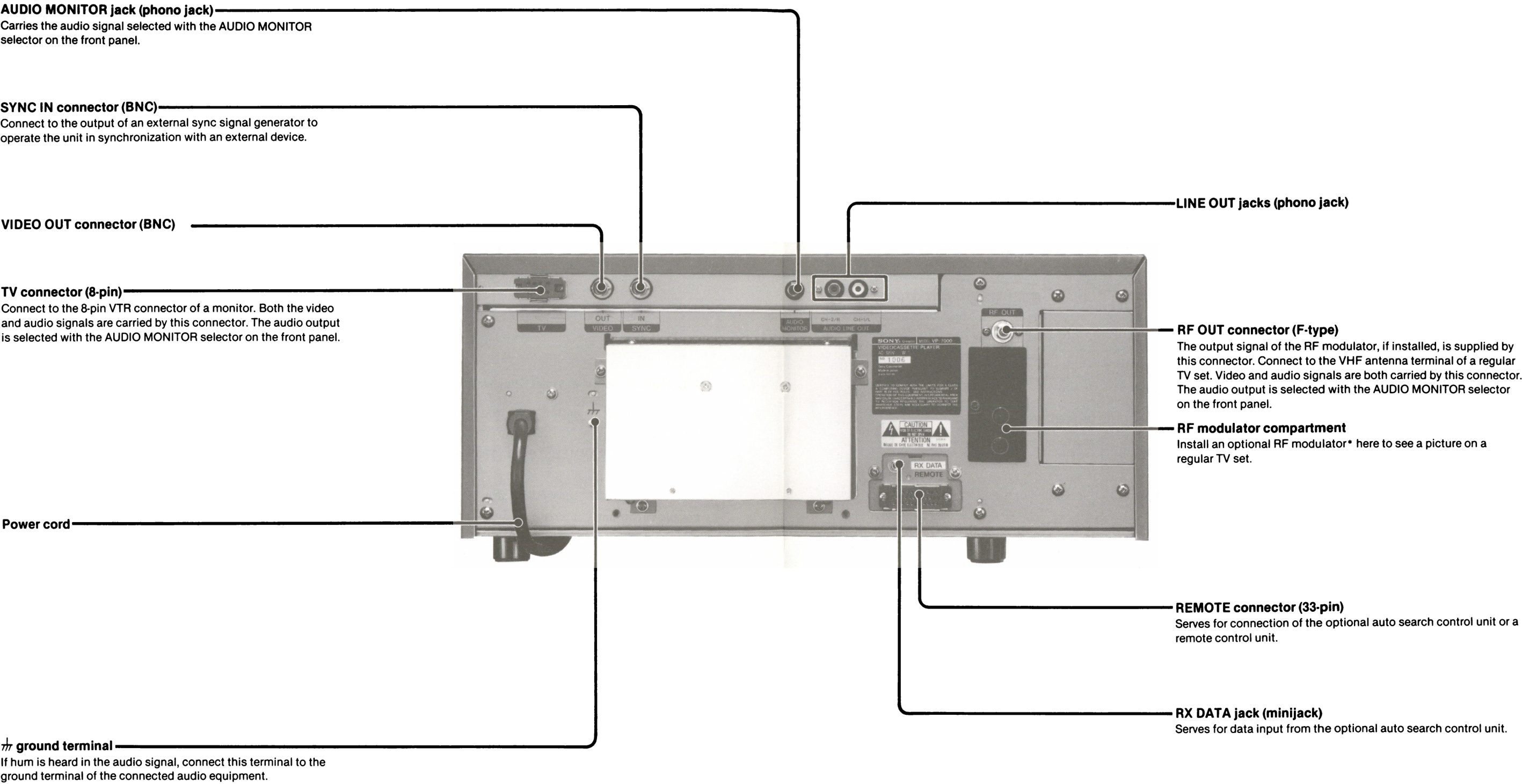
PROGRAMMED OPERATION selector setting	RESET button function
OFF or 	Resets the time counter to 00:00 and clears the MARK IN A, B button memory.
	When kept depressed for more than 2 seconds, the total accumulated operation time of the head drum is shown in 50-hour increments.

REMOTE connector (special minijack)
Connect the optional RM-690 remote control unit.

Time counter and FRAME CODE/CTL selector
Normally, the CTL signal count is used to display the tape playback time in minutes and seconds (relative indication). When the optional BKU-701 is installed and a tape which contains frame code information is played back, the selector operates as follows.

Selector position	Counter display
FRAME CODE	Frame code (absolute position)
CTL	Playing time

REAR PANEL

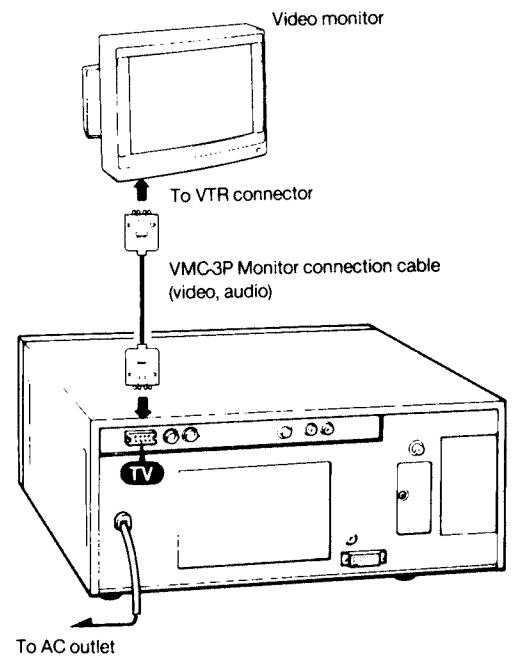


* The RF modulator converts the output to a VHF signal for channel 3 or channel 4, for viewing on a regular TV set without video input.

1-3. CONNECTION

1-3-1. Connection to a Video Monitor

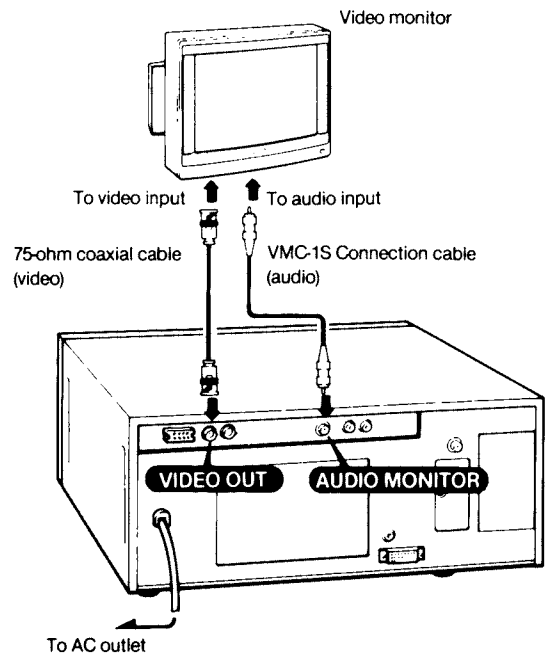
FOR CONNECTING A VIDEO MONITOR
WITH AN 8-PIN VIDEO CABLE



Align the pins before inserting (connector can only be inserted one way).

To remove the connector, press the claws on both sides and pull the plug out.

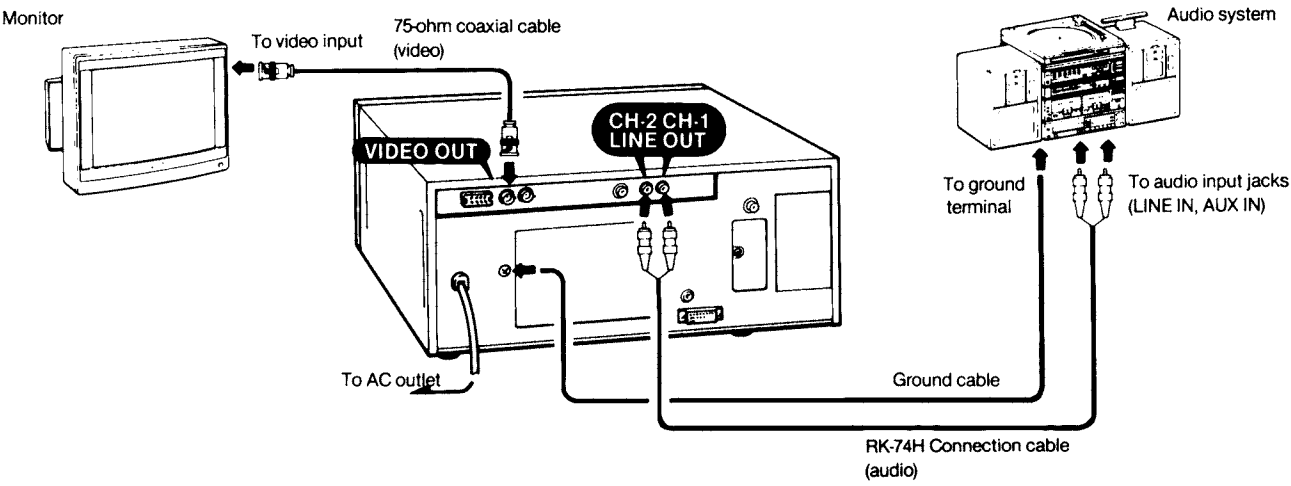
FOR CONNECTING A VIDEO MONITOR
NOT HAVING AN 8-PIN VTR CONNECTOR



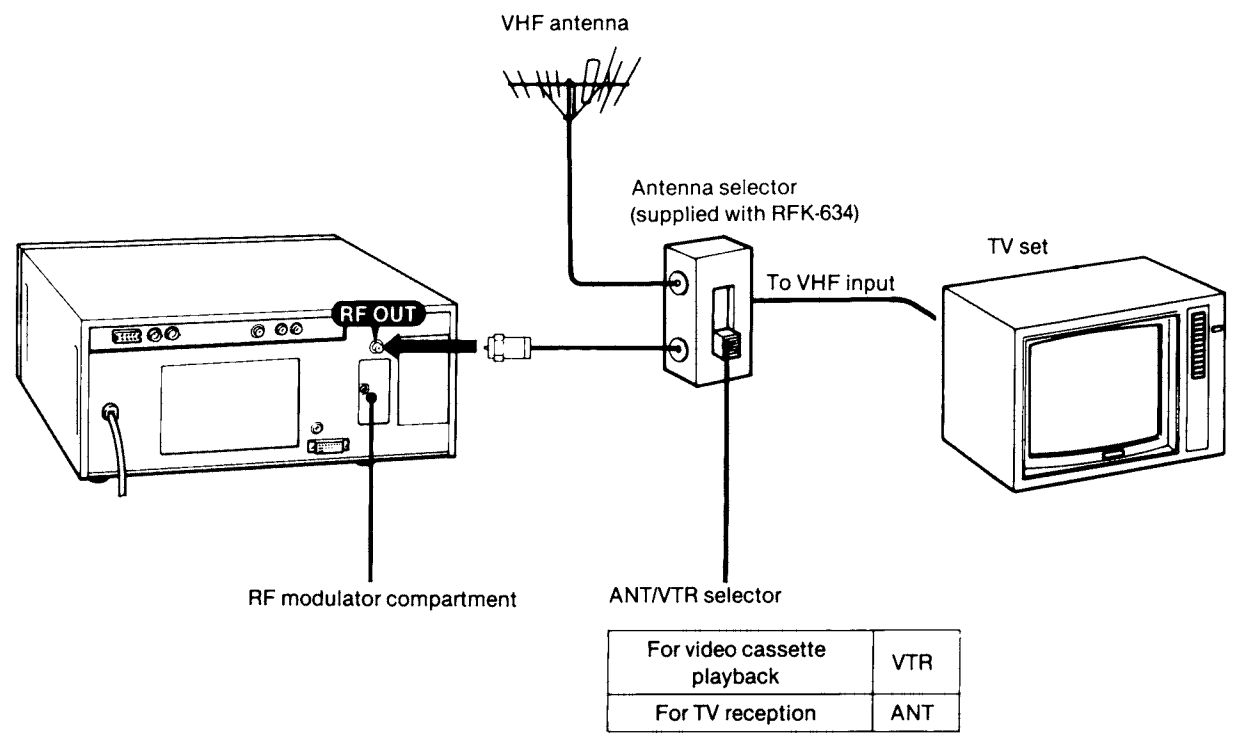
Use of BNC connector

Align pin with cutout, slide connector in and turn right to fasten. To remove, turn left and pull connector out.

1-3-2. Connection to an Audio/Video System

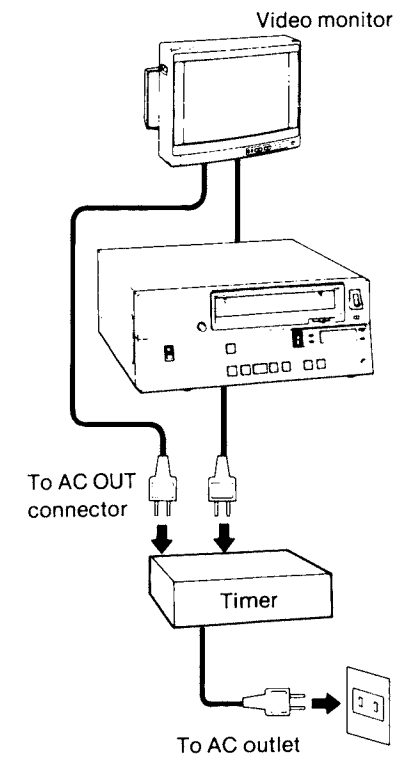


1-3-3. Connection to a TV Set



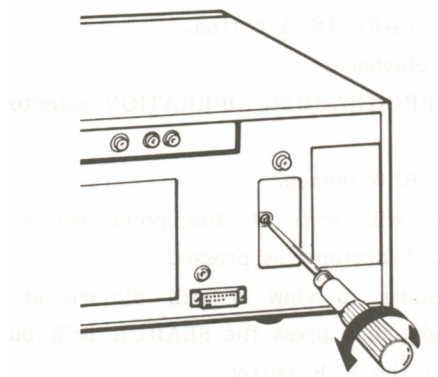
1-3-4. Connection to a Timer Playback

- 1 Turn the video monitor and the videocassette player on.
- 2 Set the PROGRAMMED OPERATION selector to OFF.
- 3 Insert the video cassette into the cassette compartment until it stops.
- 4 Set the timer to the desired start time.
Power to the video monitor and the video-cassette player is cut off, but the POWER switches of these units must be left in the ON position.
- 5 Set the TIMER switch to PLAY.

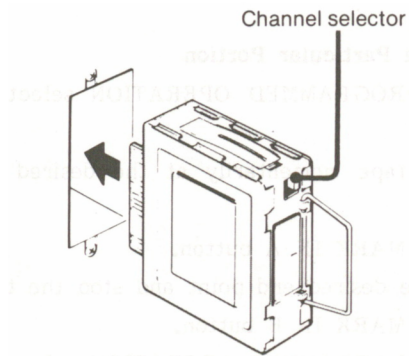


1-4. INSTALLING THE RF MODULATOR

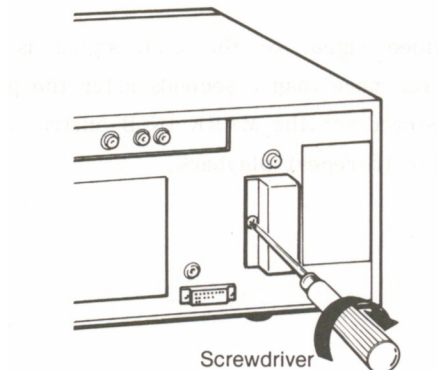
- 1 Remove the cover of the RF modulator compartment.



- 2 Set the channel selector of the RF modulator to a VHF channel not used in your area (channel 3 or 4).



- 3 Insert the RF modulator into the compartment, taking care to align it properly.
- 4 Replace the supplied compartment cover.



1-5. OPERATION

To stop playback

Press the STOP button.

When the tape is played back to the end

It automatically rewinds to the beginning and stops.

If noise or snow appear in the playback picture

Turn the TRACKING control slowly to the left or right to obtain optimum picture quality. Always return the control to the FIXED position after playback.

To stop the tape momentarily

Press the PAUSE button. The tape stops and a still picture will appear on the monitor screen. To resume playback, press the PAUSE button again or press the PLAY button.

The long pause mode

If the pause mode continues for about 8 minutes, the tape around the head drum automatically slackens to protect the video heads and the tape, and the still picture disappears. This is called the long pause mode.

To cancel the long pause mode, press the PAUSE button.

The playback picture during the search operation

During the search operation the servo system is not locked, so guard-band noise flows on the playback picture.

STANDBY indicator does not go out and tape function button do not operate

Turn the unit off and then on again.

STANDBY indicator goes out, but tape function buttons do not operate

Press the EJECT button to eject the cassette. Take up any slack in the leader tape by turning the hubs in the direction shown by the arrow on the bottom of the cassette. Then insert the cassette and try again.

Memory backup

The points stored with the MARK IN A and B buttons and the last tape counter indication are retained by an internal backup battery also while the power is turned off. When the battery is exhausted, the memory can not be retained. So it is need to replace the battery.

The battery has a life of about 3 years.

To check the memory on the MARK IN buttons

1 Press the STOP button.

2 Set the PROGRAMMED OPERATION selector to



3 Press the MARK IN A or B button, and the memory on that button will be displayed on the time counter.

To display the duration between the A and B points

1 Press the STOP button.

2 Set the PROGRAMMED OPERATION selector to



3 Press the MARK IN A and B buttons simultaneously. During pressing the button, the time of playback is displayed on the time counter repeatedly.

Note on repeat playback

When the repeat playback continues for a long period of time, the playing portion may be shifted a little.

To Locate a Particular Point

1 Set the PROGRAMMED OPERATION selector to OFF.

2 Play the tape and stop it momentarily at the desired point.

3 Press the MARK IN A button.

4 Continue playback.

5 Set the PROGRAMMED OPERATION selector to



6 Press the REW button.

The tape will stop at the point where the MARK IN A button was pressed.

When wishing to view a still picture at the designated point, press the SEARCH REW button instead of the REW button.

Reverse playback is carried out at 5 times normal speed, until point A is reached.

. If a point has not been stored in memory for the MARK IN A button, the tape stops at the point where the time counter indicates "00:00".

To Repeat a Particular Portion

1 Set the PROGRAMMED OPERATION selector to OFF.

2 Stop the tape momentarily at the desired start point.

3 Press the MARK IN A button.

4 Locate the desired end point and stop the tape.

5 Press the MARK IN B button.

6 Set the PROGRAMMED OPERATION selector to



7 Press the REW button.

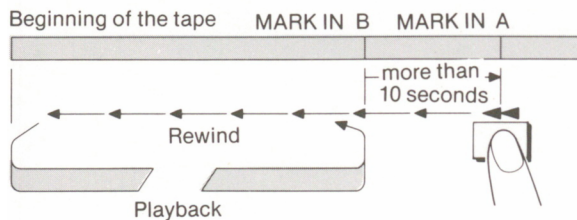
The part between the points stored for the MARK IN A and B buttons is played back repeatedly.

. If the video signal or the CTL signal is not recorded for more than 5 seconds after the point which is stored for the MARK IN B button, it is not possible to repeat playback.

To Repeat Between the Beginning of the Tape and a Particular Point

- 1 Set the PROGRAMMED OPERATION selector to OFF.
- 2 Locate the desired end point and stop the tape momentarily.
- 3 Press the MARK IN B button.
- 4 Let the tape run for at least 10 seconds, then stop the tape.
- 5 Press the MARK IN A button.
- 6 Set the PROGRAMMED OPERATION selector to .
- 7 Press the REW button.

The tape rewinds to the beginning of the tape, and then plays back the designated portion of the tape repeatedly.



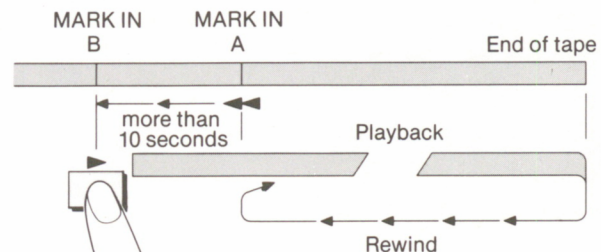
To Repeat Between a Particular Point and the End of the Tape

- 1 Set the PROGRAMMED OPERATION selector to OFF.
- 2 Locate the desired start point and stop the tape momentarily.
- 3 Press the MARK IN A button.
- 4 Press the REW button to rewind the tape for about the equivalent of 10 seconds on the tape counter, then stop the tape.
- 5 Press the MARK IN B button.
- 6 Set the PROGRAMMED OPERATION selector to .
- 7 Press the PLAY button.

The tape is played back to the end and rewinds to the point where the MARK IN A button was pressed. The playback of the designated portion of the tape is repeated.

NOTE:

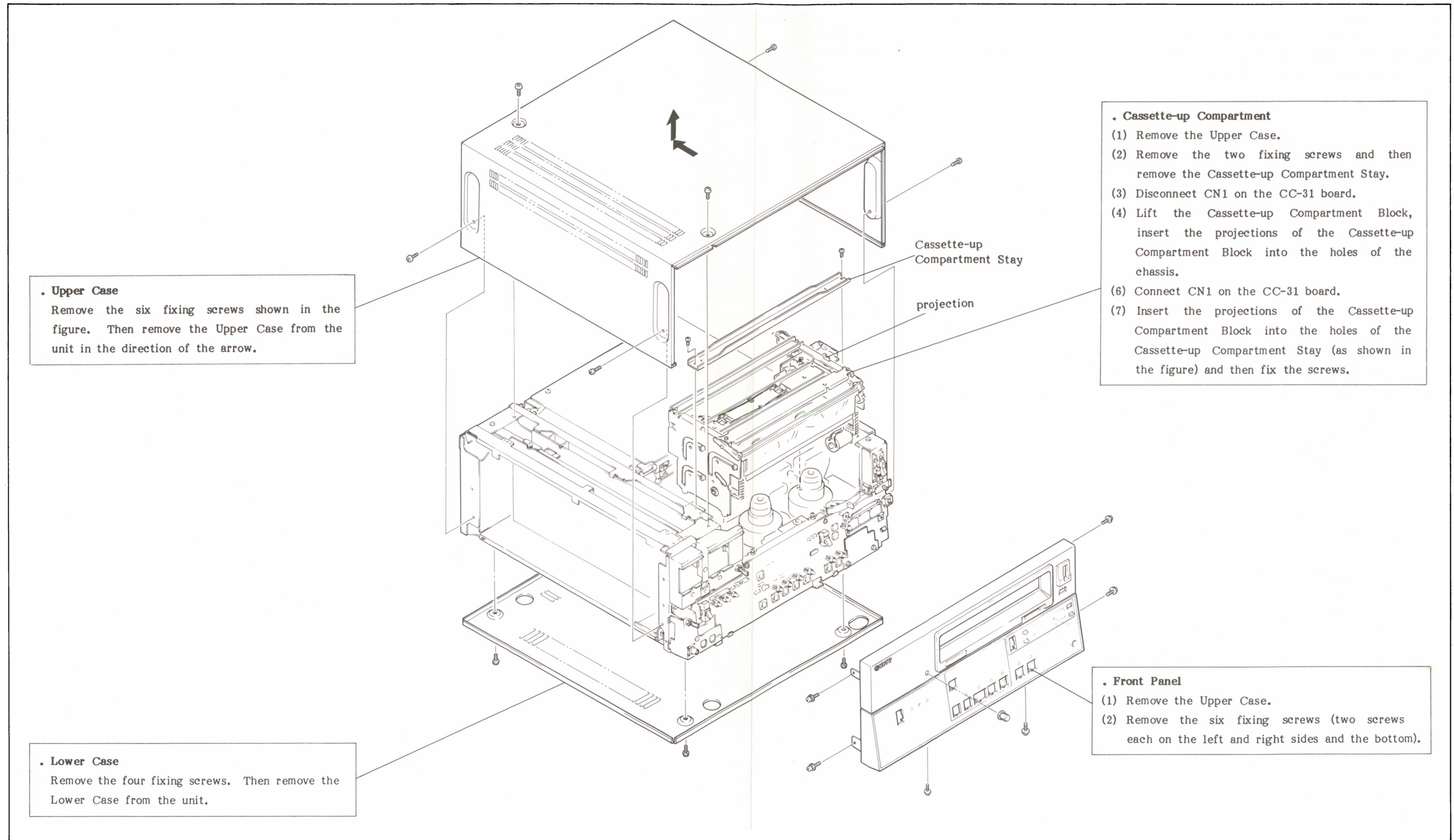
During the first playback run only, playback starts from point B.



SECTION 2

SERVICE INFORMATION

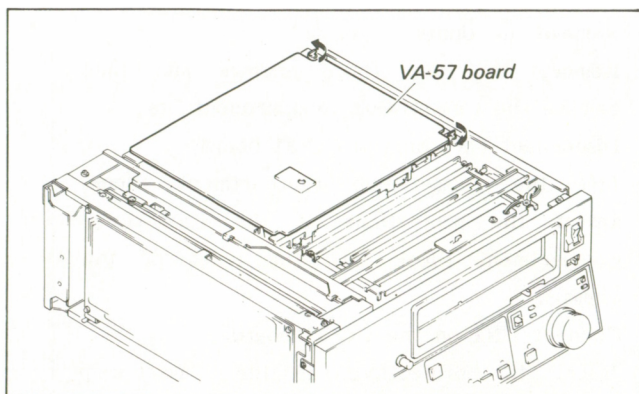
2-1. REMOVAL OF CABINET



2-2. HOW TO SERVICE THE PRINTED CIRCUIT BOARD

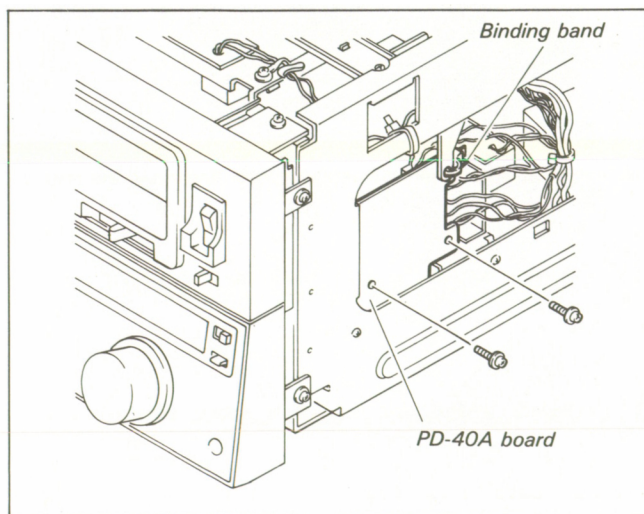
2-2-1. VA-57 Board

Turning the fastener to the direction of the arrow, the VA-57 board can be opened. Then, the component side of the VA-57 board can be repaired.



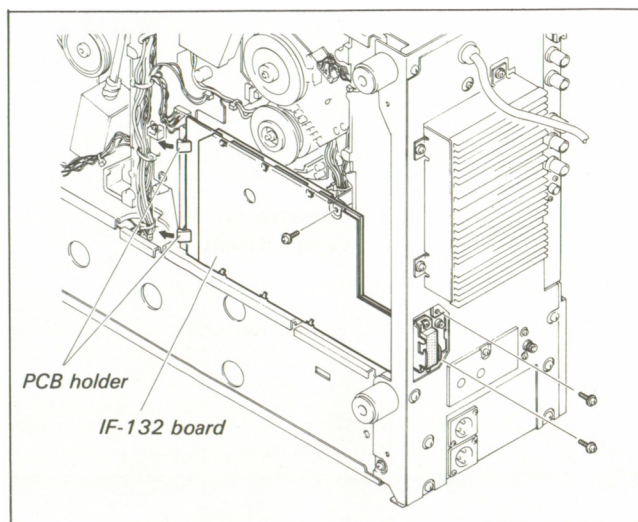
2-2-2. PD-40A Board

Cut a binding band and remove two screws, and then remove the PD-40A board.



2-2-3. IF-132 Board

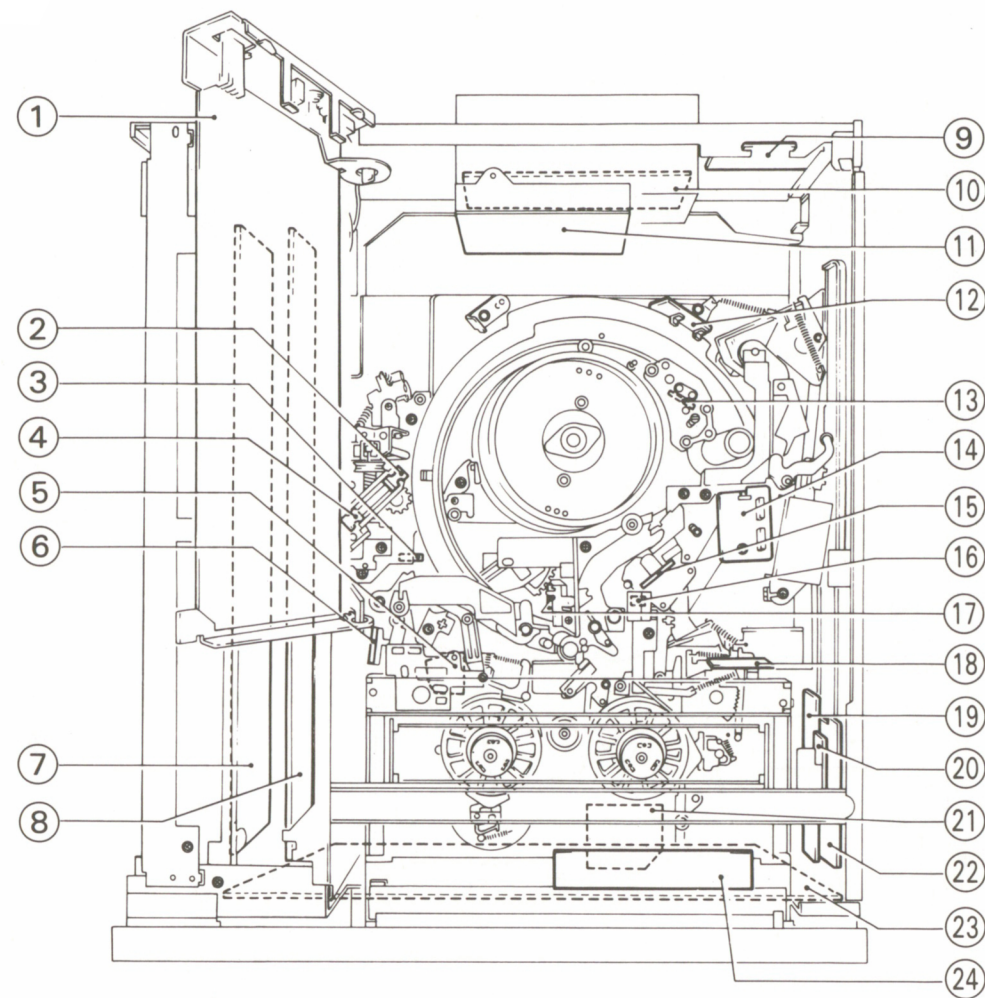
- (1) Open the PCB holder in the direction of the arrow, and then open the IF-132 board.
- (2) Remove a screw.
- (3) Remove the two screws which install RX DATA terminal and REMOTE terminal.



2-3. MAIN PARTS LOCATION

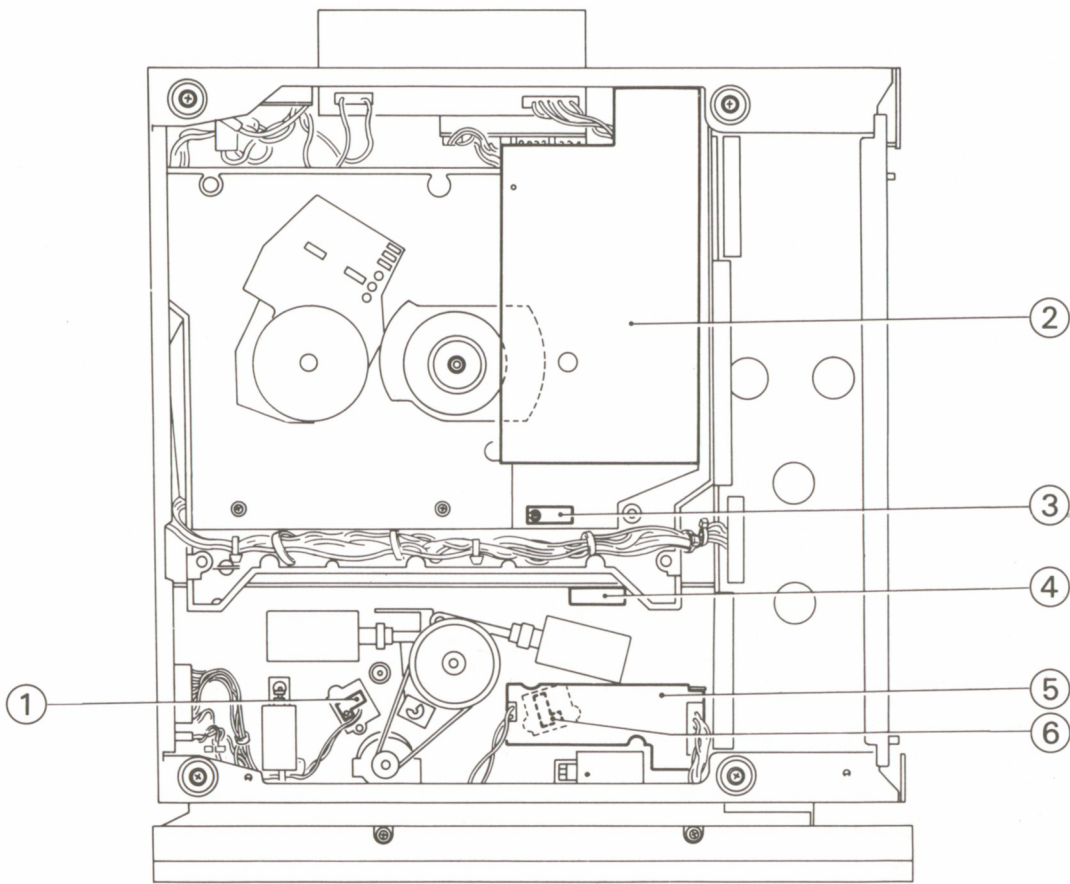
2-3-1. Location of the Printed Circuit Board

[TOP VIEW]



- | | |
|-----------------|------------------|
| 1 VA-57 Board | 13 DUS-92 Board |
| 2 PH-5 Board | 14 DUS-147 Board |
| 3 LM-13 Board | 15 EC-28 Board |
| 4 PH-5 Board | 16 PH-5 Board |
| 5 SE-46 Board | 17 PH-5 Board |
| 6 PTC-34 Board | 18 CC-33 Board |
| 7 SV-93B Board | 19 CC-32 Board |
| 8 SY-106B Board | 20 CC-31 Board |
| 9 AC-65 Board | 21 RM-39 Board |
| 10 UR-14 Board | 22 PD-40A Board |
| 11 DC-31B Board | 23 KY-105B Board |
| 12 PTC-33 Board | 24 LP-41 Board |

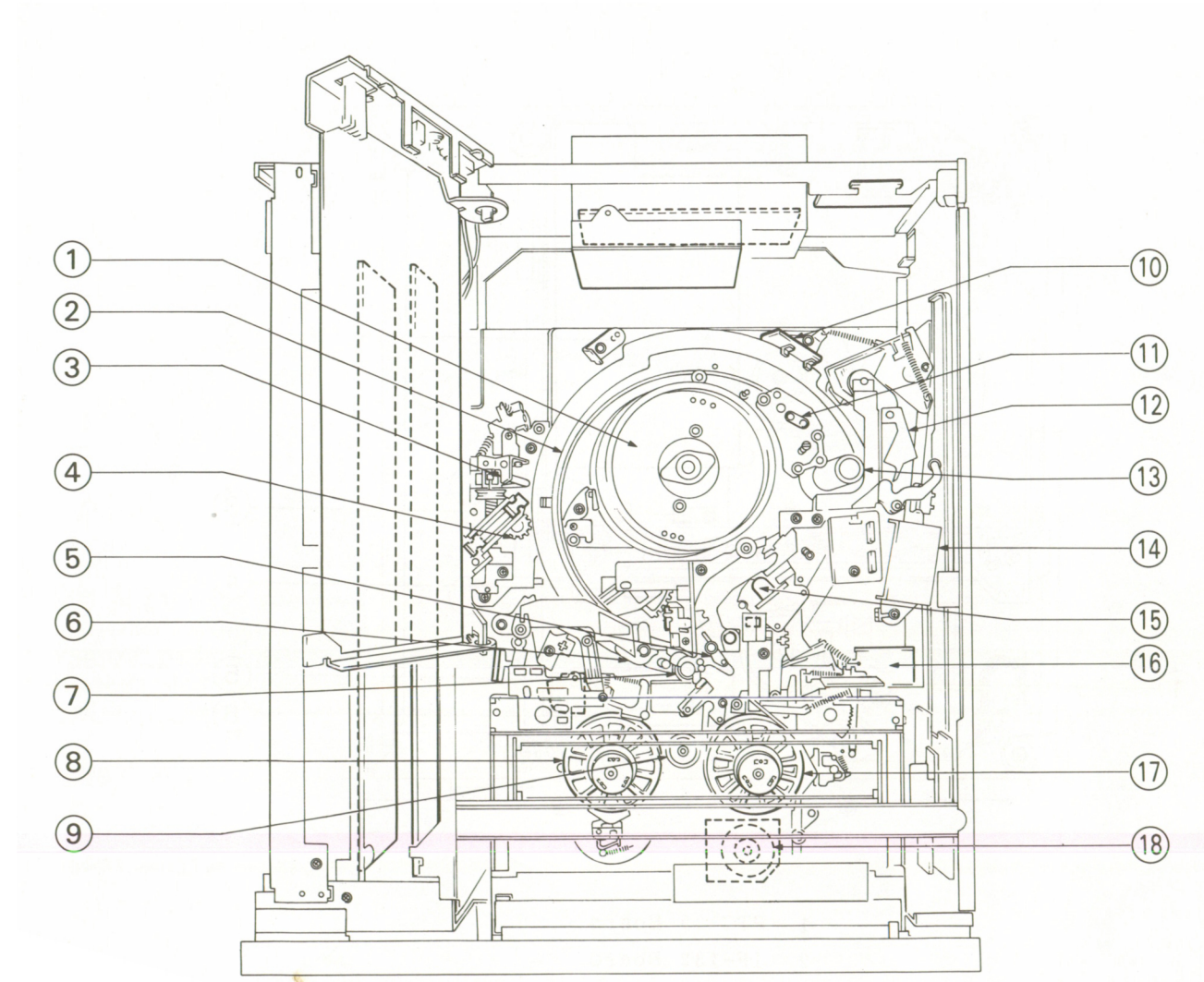
[BOTTOM VIEW]



- | |
|----------------|
| 1 PTC-35 Board |
| 2 IF-132 Board |
| 3 PT-9 Board |
| 4 TG-22 Board |
| 5 PD-41 Board |
| 6 PTC-35 Board |

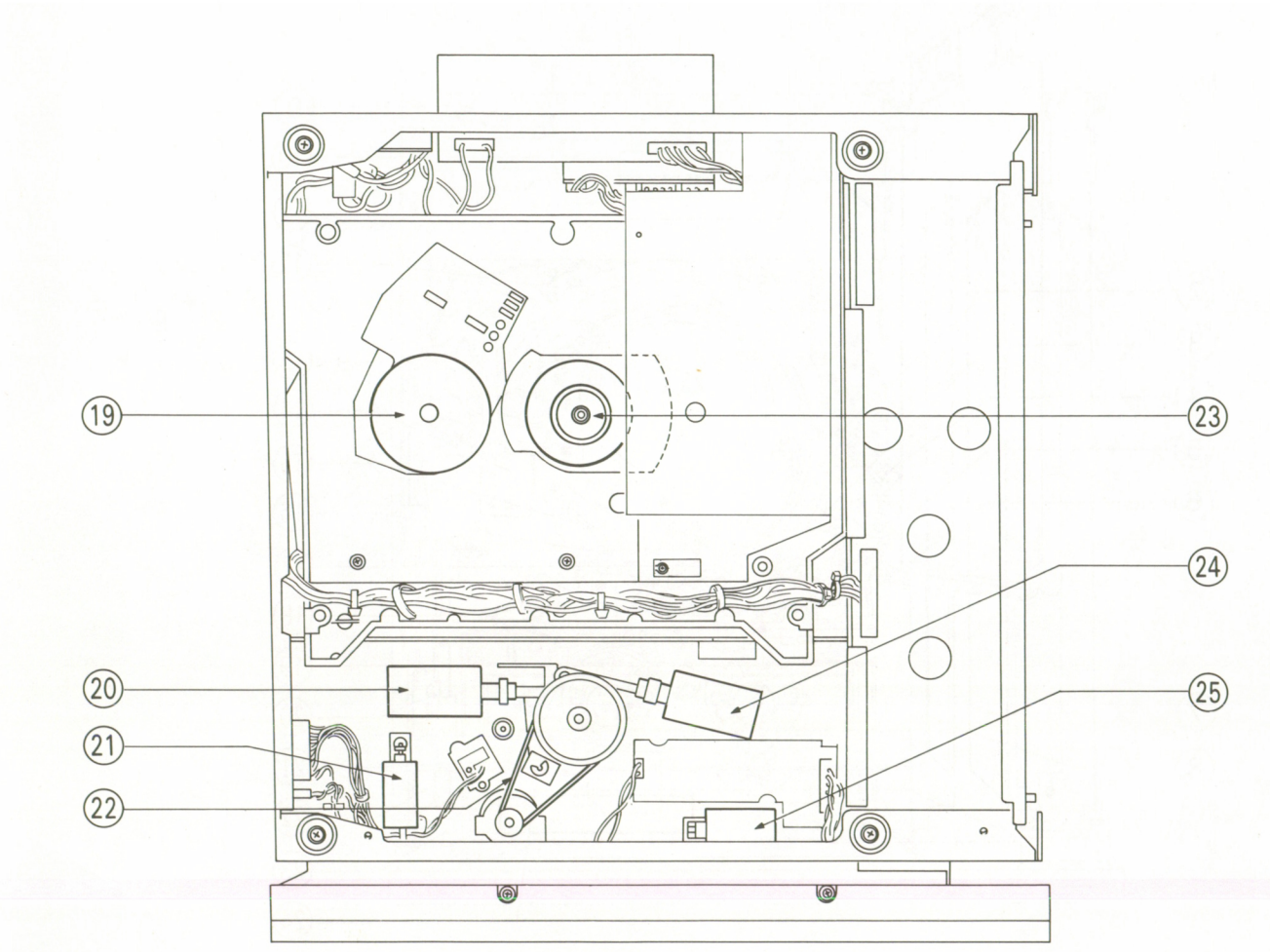
2-3-2. Location of the Mechanical Main Parts/ Components

[TOP VIEW]



- | | |
|----------------------|----------------------|
| 1 Head Drum | 10 FR Detector |
| 2 Threading Ring | 11 Audio/CTL Head |
| 3 T Correction Guide | 12 Pinch Lever |
| 4 Gear Box | 13 Capstan Shaft |
| 5 S Drawer Arm | 14 Pinch Solenoid |
| 6 T Drawer Arm | 15 CTL PB Head |
| 7 Pinch Roller | 16 Search Solenoid |
| 8 Take-up Reel Table | 17 Supply Reel Table |
| 9 FF/REW Idler | 18 Reel Motor |

[BOTTOM VIEW]



- 19 Capstan Motor
20 Supply Idler Solenoid
21 Supply Brake Solenoid
22 Belt for FF/REW Idler
23 Drum Motor
24 Take-up Idler Solenoid
25 Take-up Brake Solenoid

2-4. PRINTED CIRCUIT BOARD

Circuit information is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VA-57	Video Demodulator
AUDIO	DUS-92	Audio CTL Head
	DUS-147	Audio CTL Head
	VA-57	Audio PB Amplifier
SERVO	EC-28	CTL Head
	DUS-92	Audio CTL Head
	DUS-147	Audio CTL Head
	PT-9	Reel Motor Driver
	SV-93B	Servo System
POWER	AC-65	AC Input
	DC-31B	DC Supply
	UR-14	Switching Regulator
KEY	KY-105B	Function Key/Display
SYSTEM CONTROL	IF-132	33P Interface
	PD-40A	Plunger Solenoids
	PD-41	Plunger Solenoids
	PH-5	Tape Beginning/End Sensor
OTHERS	SY-106B	System Control
	CC-31	Cassette-up Compartment
	CC-32	Cassette In Detector
	CC-33	Cassette Down Detector
	LM-13	Threading Motor
	LP-41	Cassette Compartment Light
	PTC-33	Threadend/Unthreadend Detector
	PTC-34	FR/Unthreadend Detector
	PTC-35	S/T Reel Rotation Detector
	RM-39	Reel Motor
	SE-46	Tension Regulator Detector
	TG-22	Tension Regulator LED

2-5. CONNECTORS

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) must be used.

Panel Indication	Connector
TV	1-506-161-00 CONNECTOR, 8P, MALE
SYNC IN VIDEO OUT	1-560-069-11 PLUG, BNC, MALE
AUDIO MONITOR	1-506-311-00 PLUG, PIN
RF OUT	1-506-305-00 PLUG, F
AUDIO LINE OUT CH-1, CH-2	1-508-083-00 CONNECTOR, XLR, 3P, MALE

2-6. OUTPUT SIGNAL OF THE CONNECTOR

VIDEO OUT 1, 2 : 1.0 ± 0.2 Vp-p,
75 ohms, unbalanced,
sync negative

AUDIO LINE OUT CH-1/L, CH-2/R
: +4 dB (600-ohm load),
balanced

AUDIO MONITOR
: -5 dB (47-kohm load)

2-7. SPARE PARTS

(1)

The shaded and -marked components are critical to safety.

Replace only with the same components as specified.

(2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape and outside view from the parts which are used in the unit. This is due to "accommodating improved parts and/or engineering changes" or "standardization of genuine parts".

- . This manual's exploded views and electrical spare parts lists indicate the part numbers of "the present standardized genuine parts".

- . Regarding engineering part changes by our engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

2-8. SELECT SWITCH SETTING

Along with the select switches on the control panel and the connector panel, the switch listed below is on the SY-106B board. This switch must be set according to operating conditions.

. SY-106B Board

SW1: SELF DIAGNOSTIC Switch

ON: SELF DIAGNOSTIC mode

OFF: NORMAL mode

When the unit is shipped, this switch is set to the OFF position.

2-9. HOW TO OPERATE THE MACHINE WITHOUT INSTALLING A CASSETTE TAPE

(1) Remove the Cassette-up Compartment. (Refer to Section 2-1.)

(The Tape Beginning Sensor and Tape End Sensor are disabled according to disconnect the connector of Cassette-up Compartment.)

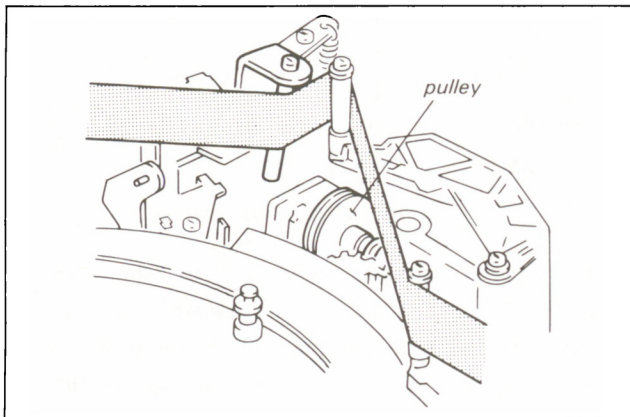
(2) Turn the power ON. (The machine enters the FR-STOP mode automatically.)

(3) The machine can be placed into the desired mode by pressing the function button corresponding to the mode.

2-10. CASSETTE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

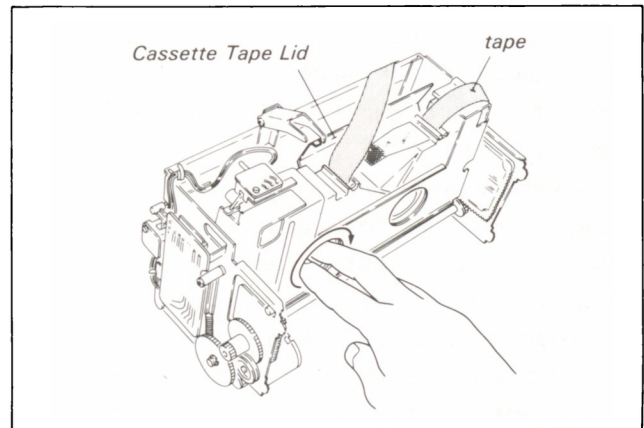
If the EJECT operation becomes impossible due to trouble or the Cassette-up Compartment does not rise when the EJECT operation takes place, the cassette tape can be removed from the set by following the procedures described below.

- (1) Turn the power OFF.
- (2) Remove the Upper Case. (Refer to Section 2-1.)
- (3) Turn the white pulley of the Gear Box by hand in a clockwise direction looking from the front panel side until the Threading Ring is in the FR-STOP position (until the S Drawer Arm is located at the front of CTL head). (At this time, the Threading Ring moves in the unthreading direction. But the tape remains at the position of threading completion.)

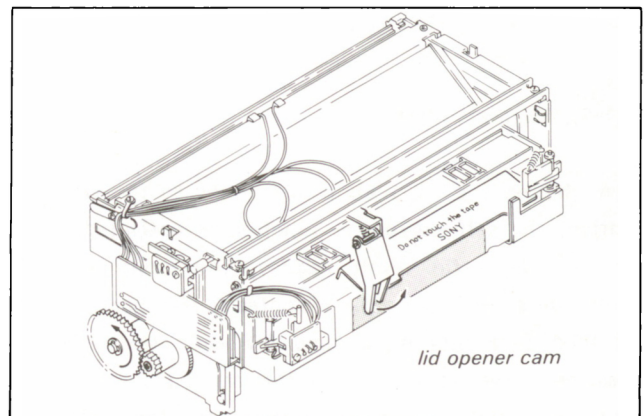


- (4) Disconnect the connector CN1 on the CC-31 board of the Cassette-up Compartment.
- (5) Remove the Cassette-up Compartment Stay. (Refer to Section 2-1.)
- (6) Slowly lift the Cassette-up Compartment with the cassette tape in it. Remove the tape remaining in the set carefully so that it is not damaged.

- (7) Hold the Cassette Tape Lid so that it does not close. Wind the tape into the cassette by turning the reel hub on the back of the cassette by hand.



- (8) Raise the cam for opening the lid and close the cassette lid.



- (9) Remove the tape from the Cassette-up Compartment.
- (10) Turn the gear on the right side of the Cassette-up Compartment by hand in a counterclockwise direction in order to place the Cassette-up Compartment into the up state.
- (11) Locate the cause of the trouble and remedy the problem.

2-11. DIAGNOSTIC FUNCTION IN SYSTEM CONTROLLER

2-11-1. Outline of Self Diagnosis

The VP-7000 has a self diagnostic function for the system control circuit which determines if the source of the problem is in the microcomputer itself or not.

The system control function is classified into mechanical and electrical operation controls. Mechanical operation control defects are efficiently analyzed using the self diagnostic function.

The VP-7000 employs six one-chip microcomputers. M1 and M2 which include the respective memories and I/O ports, are used for the master controls. M3 is for controlling the capstan motor, M4 is for controlling the display, M5 is for decoding the remote control signal and M6 is used for 33-pin interface.

2-11-2. Diagnosis Method

When SW1 on the SY-106B board is set to the ON position, the self diagnostic function is activated. For the diagnostic result display, the input and output data of the microcomputer's I/O port is displayed four bits at a time for each test address, as shown on pages 2-14 through 2-17.

When the RESET button is pressed, the test address is displayed. When the MARK IN A button is pressed while the RESET button is pressed, the LSB of the test address is changed as shown below.

→ 0 → 1 → 2 → ... → 9 → L → H → P → R → -(minus) → (blank) →

When the MARK IN B button is pressed while the RESET button is pressed, the MSB of the test address is changed as shown below.

→ 0 → 1 → 2 →

Twenty-six test addresses are available in hexadecimal notation. Therefore, when the RESET, MARK IN A and MARK IN B buttons are pressed, any test address data (digits 1 through 4) shown in the table on pages 2-14 through 2-17 can be displayed on the front panel LEDs. On the LED display, the logic "H" is displayed "1", and the logic "L" is "0". This logic value is changed depending on the VTR operating condition.

Therefore, the H:DRUM STOP signal at test address "01" can be observed by the following procedure.

(Operation)	(LED display) CTL display	(Remarks)
SW1/SY-106B board — ON	1100	DIAGNOSTICS MODE
Press the RESET button	00	TEST ADDRESS = 00
Press the MARK IN A button once while pressing the RESET button	01	TEST ADDRESS = 01
Release the RESET button	1111	Data for 01
	H:DRUM STOP signal	

If the drum is stopped at this time, the MSB displays "1" ("H"). When the cassette tape is inserted into the VTR and the VTR is put into the PLAY mode, the display "1" is changed to "0" (which indicates the rotation command).

The input and output signals of the microcomputer in each mode are shown in the timing chart on pages 2-19 through 2-34. If an input signal is properly sent to the microcomputer in each mode, the microcomputer sends an output signal shown in the timing chart.

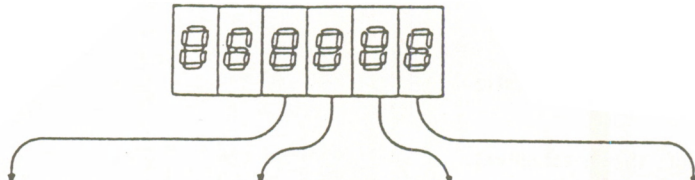
2-11-3. Troubleshooting

The troubleshooting with the self diagnostic function is described below.

The mode conversion diagram of the mechanical operation is shown on page 2-18. Referring to this diagram, check where the present trouble occurs during mode conversion, or where malfunctions are found during mechanism (e.g., motor or solenoid) operation. When the mode in which the trouble occurs is detected, refer to the timing chart described in the mode conversion diagram. The timing chart shows the input and output signals of the microcomputer in each mode. Therefore, when the motor or solenoid is abnormal, observe the output signal line using an LED to check whether it is changed as shown in the timing chart. When the output signal from the microcomputer is normal, check the output signal of the next microcomputer. This process is continued. If the signal line is not changed as shown in the timing chart, refer to the schematic diagram for the trouble location. The timing chart lists an input/output signal name, signal display test address and digit, and the microcomputer pin name through which a signal is input and output.

For example, the H:DRUM STOP signal is "01-DIGIT 1" and is displayed in the MSB (digit 1) when the test address is "01". Whether the input and output signals are changed as shown in the timing chart is checked with the actual VTR operation.

2-11-4. Diagnosis List



TEST ADDRESS	DISPLAYED DATA				INPUT/OUTPUT PORT NAME ON THE MICRO PROCESSOR	
	DIGIT 1	DIGIT 2	DIGIT 3	DIGIT 4		
00	CAPSTAN CMD FWD/REW (1=FWD CMD 0=REV CMD)	DRUM NORMAL/SEARCH (1=NORMAL 0=SEARCH MODE)	0	0	E1	OUT/IC7 on SY
01	H:DRUM STOP CMD (1=DRUM STOP 0=DRUM ROTATE)	1	1	1	E2	OUT/IC7 on SY
02	CTL COUNT UP/DOWN (1=COUNT UP 0=COUNT DOWN)	1	1	1	E3	OUT/IC7 on SY
03	H:REEL REV 1=SEARCH REV MODE	H:REEL FWD 1=PLAY.REC.or-SEARCH FWD MODE	H:REEL STILL 1=PLAY (REC) PAUSE or SEARCH PAUSE	H:REEL STOP 1=STOP MODE	P	OUT/IC7 on SY
04	H:REEL FF/REW (1=FF or REW MODE 0=other mode)	L:SEARCH SOL.ON (1=OFF 0=ON)	L:PINCH SOL.ON (1=OFF 0=ON)	1	0	OUT/IC7 on SY
05	L:T-BRAKE SOL.ON (1=OFF 0=ON)	L:S-BRAKE SOL.ON (1=OFF 0=ON)	L:T-IDLER SOL.ON (1=OFF 0=ON)	L:S-IDLER SOL.ON (1=OFF 0=ON)	E0	OUT/IC7 on SY
06	SEARCH SPEED DATA (NOTE 1)				R2	OUT/IC7 on SY
07	L:CASSETTE COMPARTMENT UP CMD 0=UP	L:CASSETTE COMPARTMENT DOWN CMD 0=UP DOWN	L:THREAD MOTOR ON 0=THREAD	L:UNTHREAD MOTOR ON 0=UNTHREAD	R3	OUT/IC7 on SY
08	L:SERVO LOCK (1=UNLOCK 0=LOCK)	L:FR-UNTHREAD POSITION	H:CASSETTE DOWN 1=DOWN (NOTE 2)	H:CASSETTE IN 1=INSERTED	K	IN/IC7 on SY
09	H:DRUM STOP (1=STOP 0=ROTATE)	L:REEL STOP (1=STOP 0=ROTATE)	H:T-IDLER ON (1=ON 0=OFF)	H:T-REEL STOP (1=STOP 0=ROTATE)		
0L	L:CAPSTAN STOP (1=ROTATE 0=STOP)	CAPSTAN FWD/REV (1=FWD 0=REV)	UNTHREAD END (NOTE 3)	THREAD END		
0H	0	0	PAUSE SELECT-1 (NOTE 4)	PAUSE SELECT-0	E4	IN/IC7 on SY
0P	L:DRUM ROTATE (1=STOP 0=ROTATE)	L:CASSETTE CONNECT 0=COMPARTMENT IS CONNECTED	L:SLACK DET:OFF (NOTE 5)	0	E5	IN/IC7 on SY
OR	RING SLACK ERROR MESSAGE (NOTE 6) The condition of VTR is detected by IC7/SY board when the ring slack occurs. The RING SLACK means that the threading ring isn't rotating.					
0-	0	0	0	0		
0(Blank)	0	0	0	0		

20	REEL SLACK ERROR MESSAGE (NOTE 7) The condition of VTR is detected by IC12/SY board when the reel slack occurs. The REEL SLACK means that the reel motor is not rotating.			
21	0	0	0	0
22	0	0	0	0
23	L:UNTHREAD (1=OTHER MODE 0=UNTHREAD MODE)	L:RX-DATA REC (1=OTHER MODE 0=RX-DATA REC MODE)	L:VIDEO MUTE (1=VIDEO is OUTPUT 0=VIDEO is MUTED)	H:AUDIO MUTE (1=AUDIO is MUTE 0=AUDIO is OUTPUT)
24	1	0	1	0
25	0	0	0	0
26	0	0	0	0

NOTE 1 SEARCH SPEED DATA

DATA DISPLAYED	TAPE SPEED
0 0 0 0	NOISELESS STILL
0 0 0 1	$\times 1/30$
0 0 1 0	$\times 1/10$
0 0 1 1	$\times 1/5$
0 1 0 0	$\times 1/2$
0 1 0 1	$\times 1$
0 1 1 0	$\times 2$
0 1 1 1	$\times 5$
1 0 0 0	$\times 8$
1 0 0 1	STILL

NOTE 2 CASSETTE POSITION

CASSETTE DOWN	CASSETTE IN	CASSETTE POSITION
0	0	DURING CASSETTE-IN
0	1	DURING CASSETTE-DOWN
1	0	CASSETTE-UP COMPLETION
1	1	CASSETTE-DOWN COMPLETION

NOTE 3 THREAD END/UNTHREAD END

UNTHREAD END	THREAD END	THREADING RING POSITION
1	1	Between CASSETTE-IN and FR-STOP
0	1	THREAD END position
0	0	Between FR-STOP and THREAD END
1	0	FR-STOP position

NOTE 4 PAUSE SELECT-1/PAUSE SELECT-0

PAUSE SELECT-1	PAUSE SELECT-0	PAUSE TIMER
0	1	8 min
1	1	1 min
1	0	10 sec
0	0	2 sec

NOTE 5 SLACK DETECT

When shorting between TP 3 and GND(E1)
on The SY board, SLACK Detector
does not operate.
Normal state is "H".

NOTE 6 RING SLACK ERROR MESSAGE(This item shows that the mode when the RING SLACK occurs.)

DATA DISPLAYED	CONDITION
0 0 0 0	RING SLACK is not occurring.
0 0 0 1	CASSETTE DOWN →FR-STOP
0 0 1 0	FR-STOP →THREAD END
0 1 0 0	FR-STOP →CASSETTE DOWN
0 1 0 1	DURING CASSETTE IN

NOTE 7 REEL SLACK ERROR MESSAGE(This item shows that the mode when the RING SLACK occurs,)

DATA DISPLAY				CONDITION
0	0	0	0	REEL SLACK DOES NOT OCCUR
0	1	1	0	FF or REW MODE
0	1	1	1	FR-STOP →FR UNTHREAD
1	0	0	0	THEND → FR-STOP
1	0	0	1	×5 or ×8 SPEED MODE
1	0	1	0	×1 or ×2 SPEED MODE
1	0	1	1	×1/2 SPEED MODE
1	1	0	0	×1/5 SPEED MODE
1	1	0	1	×1/10 SPEED MODE
1	1	1	0	×1/30 SPEED MODE

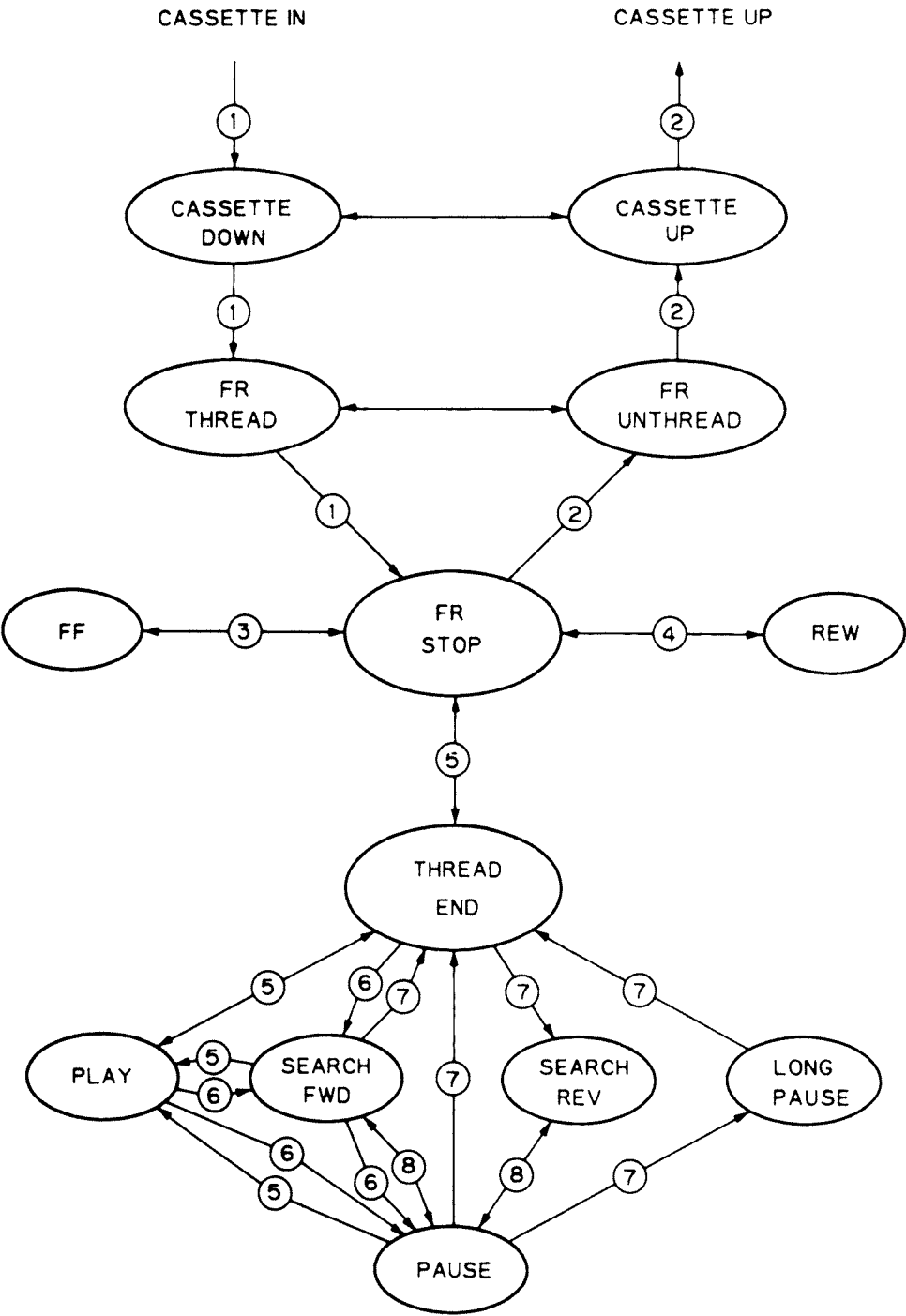
Selecting the Long Pause Timer

TYPE 7 and 9 Series can be select four pattern as the following setting. (The former models can be only one select, 8 min.)

It is can be controlled by TP5 (Address E-6) and JW144 (Address G-2).

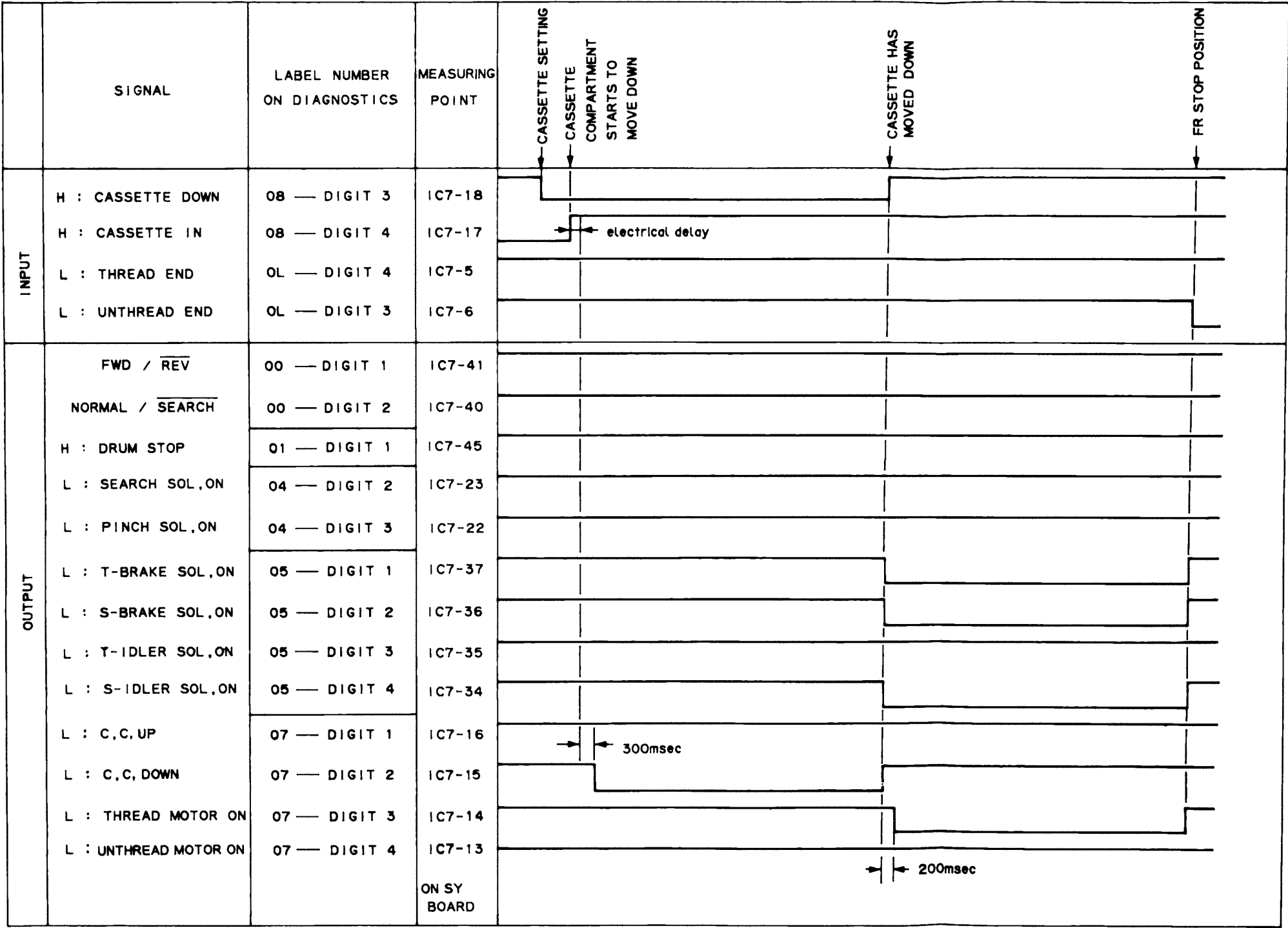
JW144	TP5	PAUSE TIMER
SHORT	OPEN	8 min.
SHORT	GND SHORT	2 sec.
OPEN	OPEN	1 min.
OPEN	GND SHORT	10 sec.

2-11-5. Mode Conversion Diagram and Timing Chart



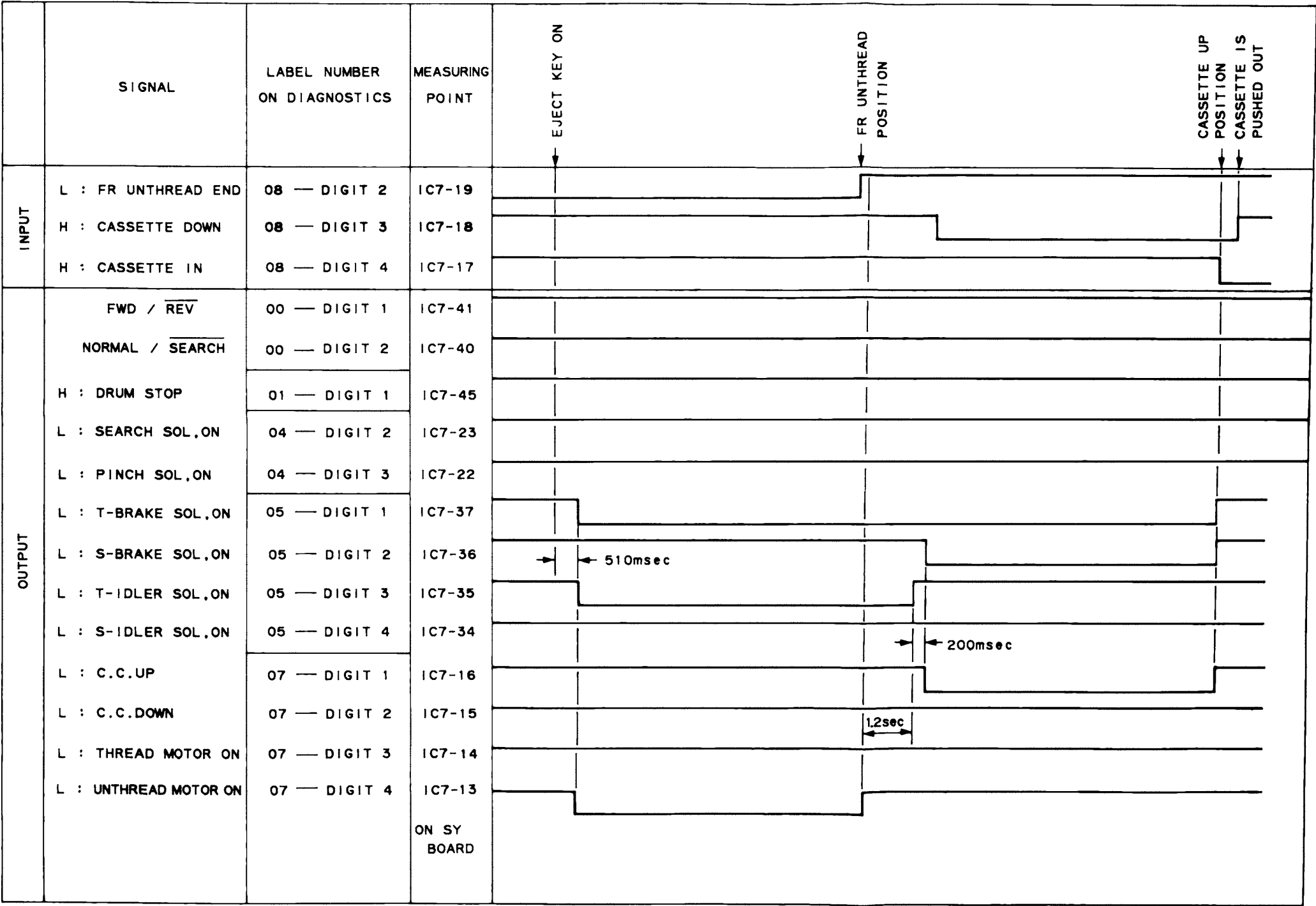
NOTE: Number in the Figure means title number of
Timing chart (page 2-19 through 2-34).

1. THREADING OPERATION (CASSETTE IN→CASSETTE DOWN→FR STOP POSITION)

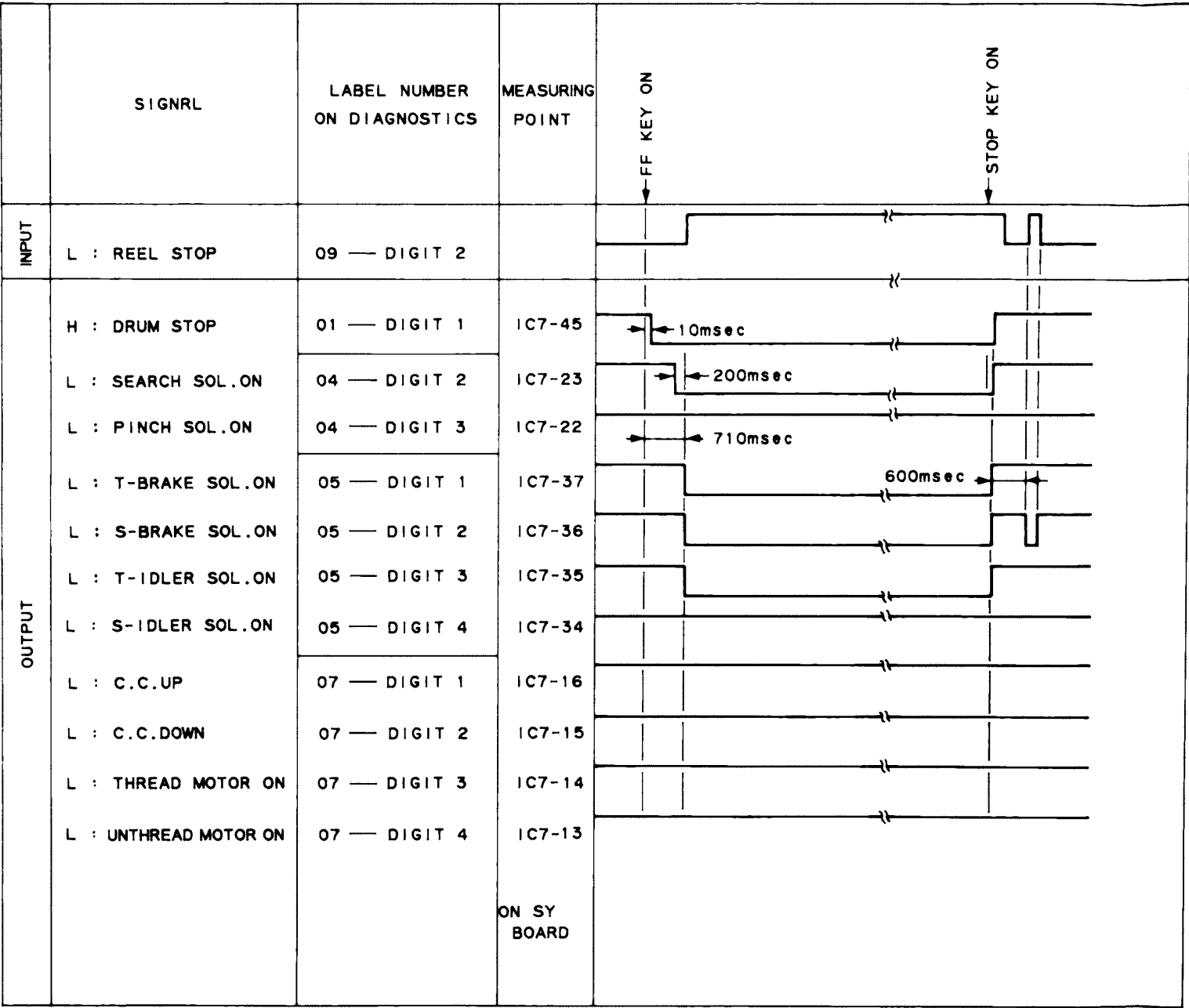


C.C. = CASSETTE UP COMPARTMENT

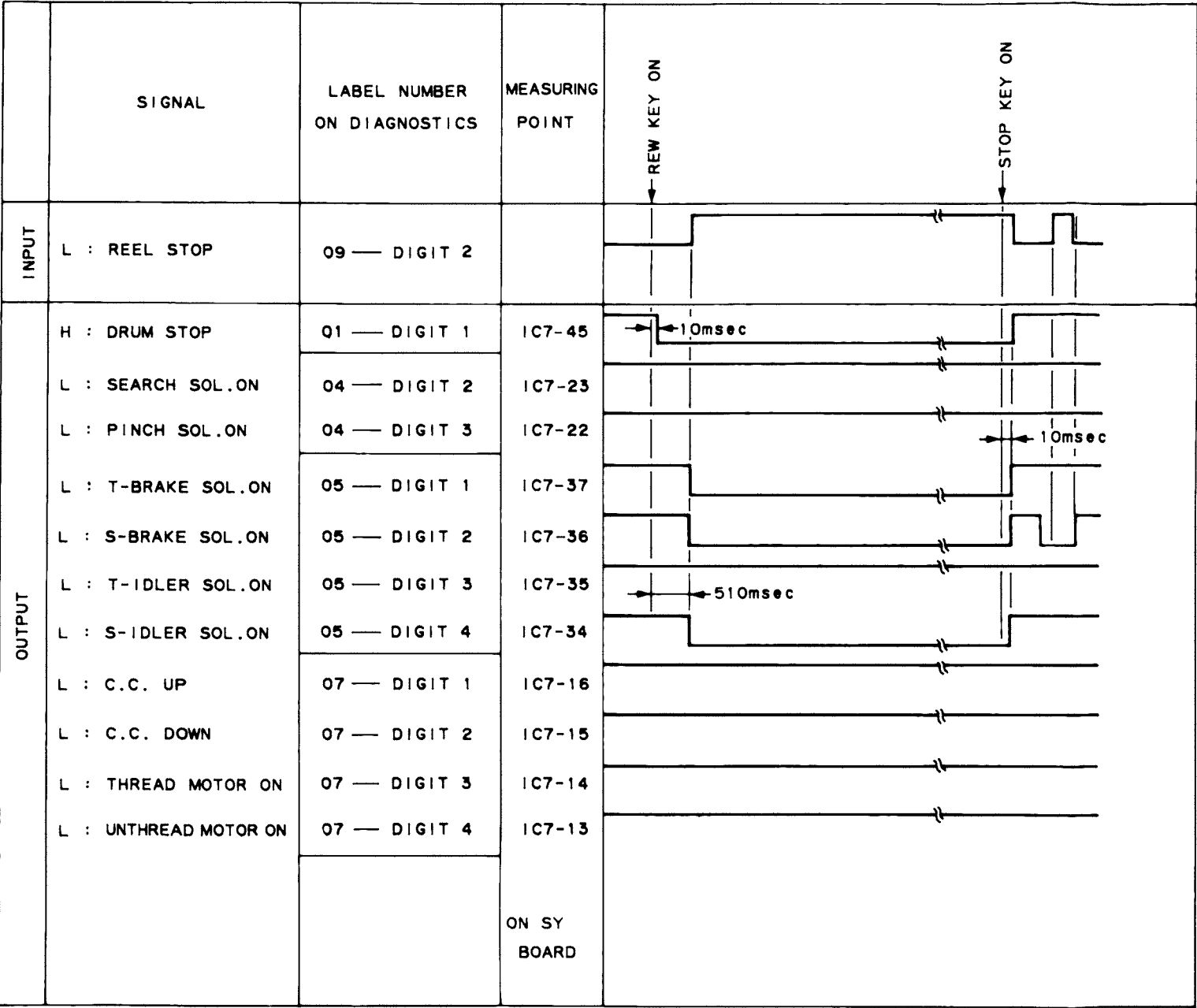
2. UNTHREADING OPERATION (FR STOP POSITION → FR UNTHREAD END POSITION → CASSETTE UP)



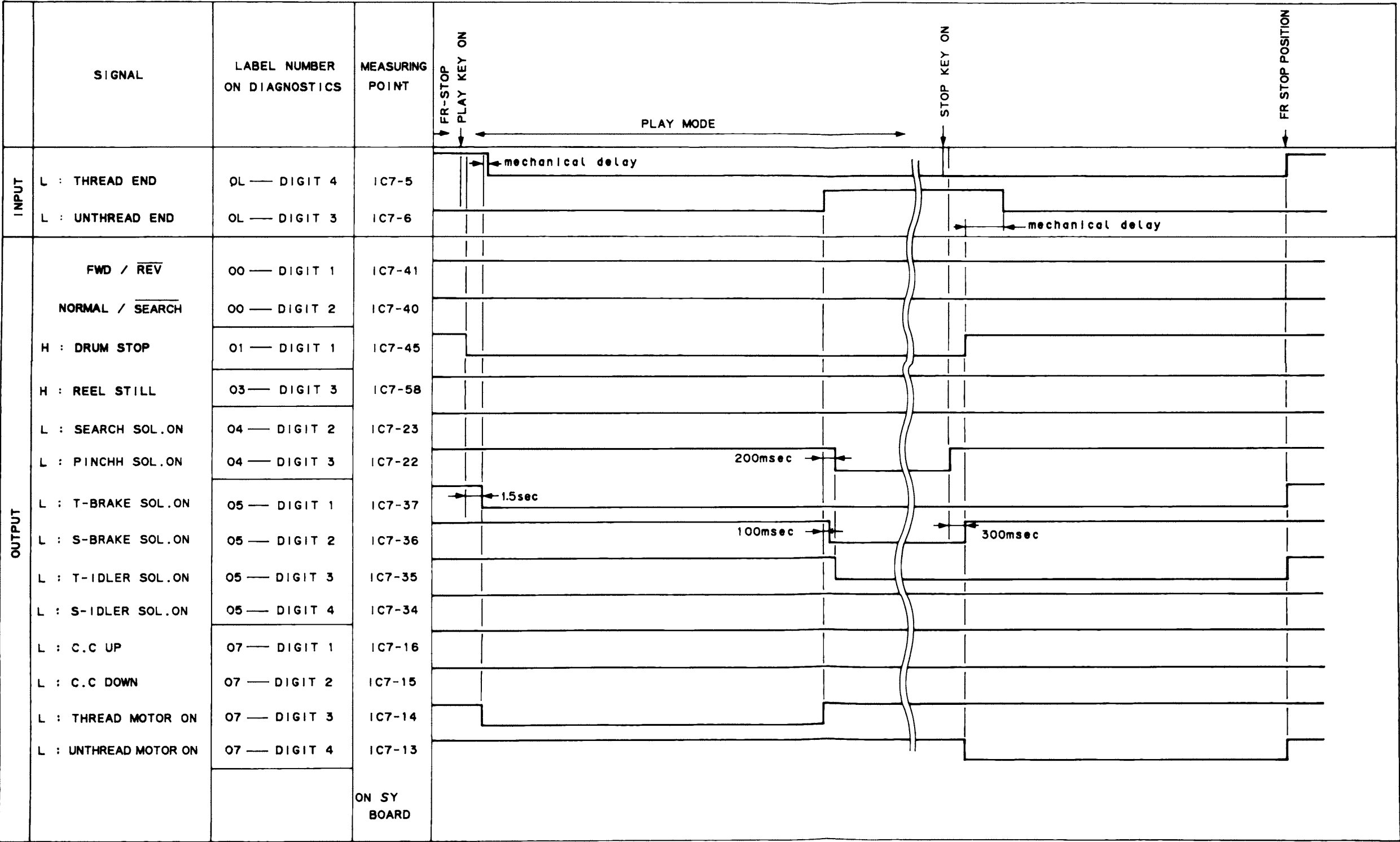
3. FF MODE (FR STOP→FF→FR STOP)



4. REW MODE (FR STOP→REW→FR STOP)



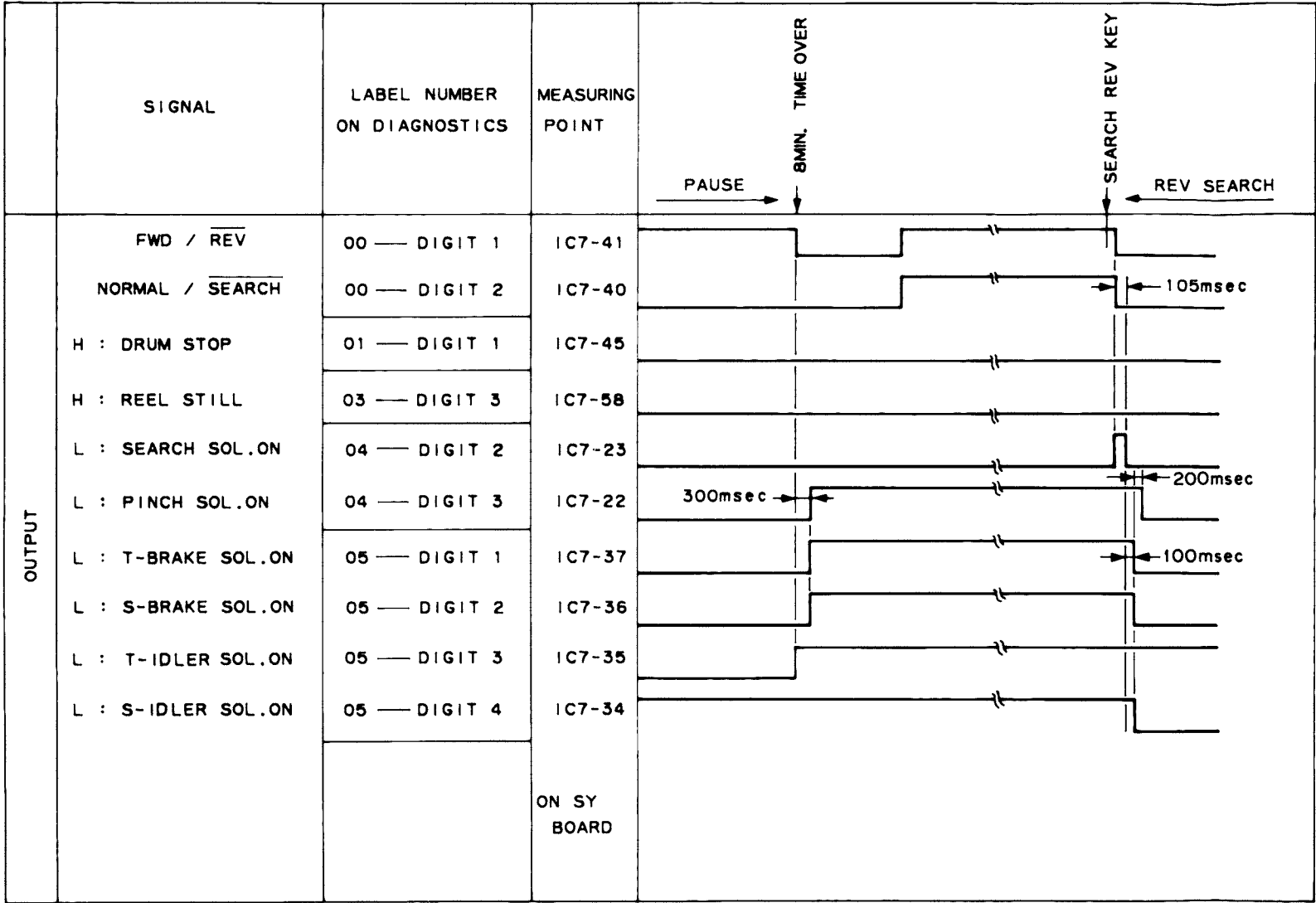
5. PLAY MODE (FR STOP→PLAY→FR STOP)



6. PLAY→FWD SEARCH→SEARCH PAUSE

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT	
				PLAY → FWD SEARCH KEY → FWD SEARCH → PAUSE KEY → PAUSE
INPUT	L CAPSTAN STOP	0L — DIGIT 1	1C7-8	
OUTPUT	FWD / REV	00 — DIGIT 1	1C7-41	
	NORMAL / SEARCH	00 — DIGIT 2	1C7-40	
	H REEL STILL	03 — DIGIT 3	1C7-58	
	L SEARCH SOL.ON	04 — DIGIT 2	1C7-23	
	L PINCH SOL.ON	04 — DIGIT 3	1C7-22	
	L T-BRAKE SOL.ON	05 — DIGIT 1	1C7-37	
	L S-BRAKE SOL.ON	05 — DIGIT 2	1C7-36	
	L T-IDLER SOL.ON	05 — DIGIT 3	1C7-35	
	L S-IDLER SOL.ON	05 — DIGIT 4	1C7-34	
			ON SY BOARD	

7. PLAY PAUSE→LONG PAUSE→REV SEARCH



8. REV SEARCH→(FWD PAUSE)→FWD SEARCH→(FWD PAUSE)→REV SEARCH

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT	
				SEARCH REV FWD SEARCH KEY FWD SEARCH REV SEARCH KEY REV SEARCH
INPUT	L CAPSTAN STOP	0L — DIGIT 1	IC7-8	
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41	
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40	
	H REEL STILL	03 — DIGIT 3	IC7-58	
	L SEARCH SOL.ON	04 — DIGIT 2	IC7-23	
	L T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37	
	L S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36	
	L T-IDLER SOL.ON	05 — DIGIT 3	IC7-35	
	L S-IDLER SOL.ON	05 — DIGIT 4	IC7-34	
			ON SY BOARD	

2-12. SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the unit to the customer:

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

- (1) A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturer's instructions to use these instruments.
- (2) A battery-operated AC milliammeter. The Date Precision 245 digital multimeter is suitable for this job.
- (3) Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V; therefore, analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable.

(Refer to Fig. A)

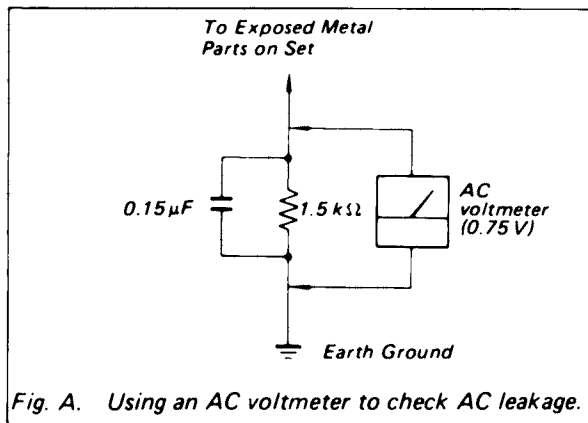


Fig. A. Using an AC voltmeter to check AC leakage.

2-13. FIXTURE

Part No.	Description
J-6001-820-A	Drum Eccentricity Gauge (3)
J-6001-830-A	Drum Eccentricity Gauge (2)
J-6001-840-A	Drum Eccentricity Gauge (1)
J-6001-930-A	Drum Eccentricity Gauge (4)
J-6009-830-A	Flatness Plate
J-6026-240-A	Adjustment Driver
J-6130-010-A	Reel Table Height Check Base Jig
J-6130-020-A	Reel Table Height Check Jig
J-6153-020-A	Dihedral Adjustment Driver
J-6150-140-A	Eccentricity Screwdriver
J-6153-580-A	Pinch Lever Adjustment Jig
Y-2031-001-0	Cleaning Fluid
2-034-697-00	Cleaning Piece
3-702-216-01	Back Tension Adjustment Jig
7-661-018-01	Sony Oil
7-732-050-20	Tension Scale (50g)
7-732-050-30	Tension Scale (100g)
7-732-050-40	Tension Scale (200g)
7-732-050-50	Tension Scale (500g)
8-899-999-53	Torque Measurement Tape
8-960-015-04	Alignment Tape, RR5-3 SA
9-911-053-00	Thickness Gauge

SECTION 3

PERIODIC CHECK AND MAINTENANCE

It is recommended that the following maintenance and the periodic check be performed as referring to the Hours Meter of the front panel for the best operation of the function and performance of the unit and for prolonging the live of the unit and the tape.

3-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after repairs regardless of the operating hours of the unit.

(1) Cleaning of the video heads

- . Press a cleaning piece moistened with cleaning fluid to the drum and turn it slowly with the hand. (Never turn the motor with electric power to clean.)
- . Never move the cleaning piece in a vertical direction of the head tip during cleaning. It might damage the head tips.

(2) Cleaning of the tape path system

- . Wipe the tape bearing surfaces (such as tape guides, drum, capstan, and pinch roller) with a cleaning piece moistened with cleaning fluid.

(3) Cleaning of the drive system

- . Wipe the drive system (such as belt, idler, and reel table surface) with a cleaning piece moistened with cleaning fluid.

3-2. PERIODIC CHECK

Perform the maintenance checks described separately in accordance with the operational hours of the unit.

3-3. OTHERS

(1) Sony Oil

- . Be sure to use Sony Oil as the lubrication oil. (If any other oil is used, various troubles might occur because of different viscosity.)

Sony Oil : Part No. 7-661-018-01

- . Use Sony Oil in which dust or other foreign material have not been mixed for lubricating the bearing. (If foreign material is in the oil, wear or burning of the bearing might occur.)

(2) Grease

Be sure to use the following grease.

Sony grease : Part No. 7-662-001-62 (SGL-501)

(3) Overhauling of the equipment

When overhauling the equipment is attempted, replace parts at the intervals indicated in the chart on page 3-2. For parts not in the list, such as motors and heads, refer the following items. (It suppose the usually state of use.)

- . Reel motor : about 3,000 H
- . Capstan motor : about 3,000 H
- . Threading motor : about 30,000 times
- . Cassette-up compartment motor : about 30,000 times
- . Audio/CTL head : about 3,000 H
- . CTL head : about 3,000 H

■ : apply oil ○ : cleaning ◆ : replace ◇ : check ◎ : apply grease

Item	Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
	Part No. of Replacement Parts												
Tape path cleaning	—	○	○	○	○	○	○	○	○	○	○	○	Perform whenever repair work is attempted *NOTE 1
Cleaning and replacement of the video head	A-6709-602-A	○	◆	○	◆	○	◆	○	◆	○	◆	○	Life of the video heads are affected extensively by operating ambient conditions *NOTE 2
Replacement of pinch roller	A-6750-226-A	○	◆	○	◆	○	◆	○	◆	○	◆	○	Life of the pinch roller are affected extensively by operating systems *NOTE 3.
Replacement of the F FWD/REW idler belt	X-3646-026-0	○	○	○	◆	○	○	○	◆	○	○	○	—
Replacement of the reel table	A-6739-016-C	○	■	○	◆	○	■	○	◆	○	■	○	—
Replacement of R brake shoe	X-3668-737-0	—	—	—	◆	—	—	—	◆	—	—	—	—
Replacement of brake band	X-3668-707-0	—	—	—	◆	—	—	—	◆	—	—	—	—
Replacement of belt on gear box	3-672-737-01	○	○	○	○	○	○	○	◆	○	○	○	—
Replacement of belt on cassette-up compartment	3-653-387-00	○	○	○	○	○	○	○	◆	○	○	○	—
Cleaning the threading roller shaft on the threading ring	—	—	○	—	○	—	○	—	○	—	○	○	Clean with a cloth moistened with cleaning fluid *NOTE 4
Apply a grease on the ring rollers	—	—	◎	—	◎	—	◎	—	◎	—	◎	○	Apply grease on the surface of the ring roller
Check the FWD back tension	—	—	◇	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 5
Check the FWD torque	—	—	◇	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 6
Check the REV torque	—	—	◇	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 7
Check the brake torque	—	—	—	—	—	◇	—	◇	—	◇	—	◇	*NOTE 8

*NOTE 1 :Refer to Section 3-1.

*NOTE 2 :Refer to Section 3-1.

*NOTE 3 :After this replacement, perform the adjustments as follows:
Section 4-9 "Pinch Roller Replacement".

*NOTE 4 :Refer to Section 4-6.

*NOTE 5 :Refer to Section 6-6.

*NOTE 6 :Refer to Section 6-3.

*NOTE 7 :Refer to Section 6-4.

*NOTE 8 :Refer to Section 6-1.

SECTION 4

REPLACEMENT OF MAJOR PARTS

4-1. REPLACEMENT OF THE UPPER DRUM

- The Rotary Video Heads cannot be replaced individually. The entire Upper Drum Assembly should be replaced when any of these heads fails.

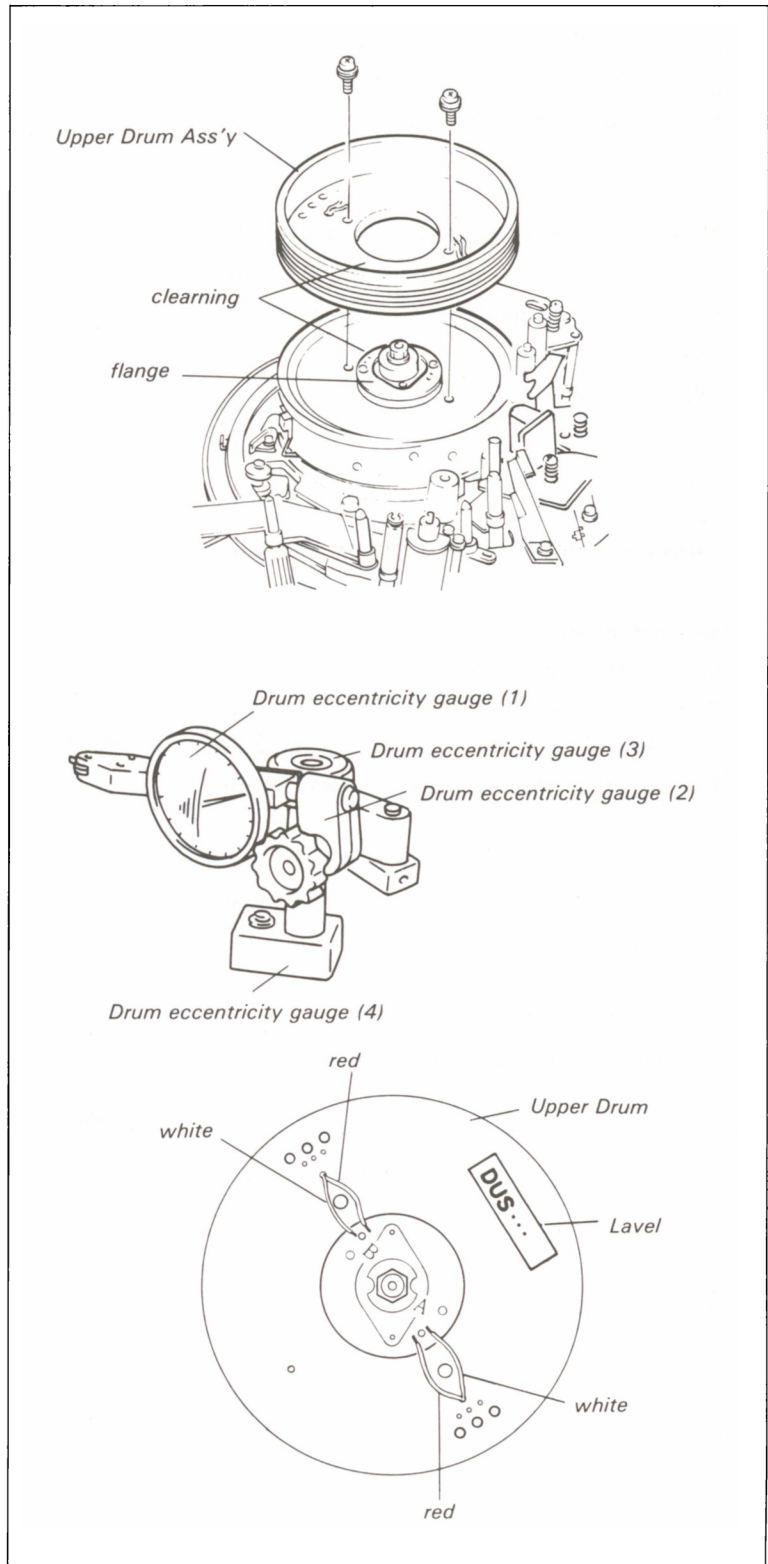
Tool: Drum eccentricity gauge (1)
Drum eccentricity gauge (2)
Drum eccentricity gauge (3)
Drum eccentricity gauge (4)

Replacement procedure:

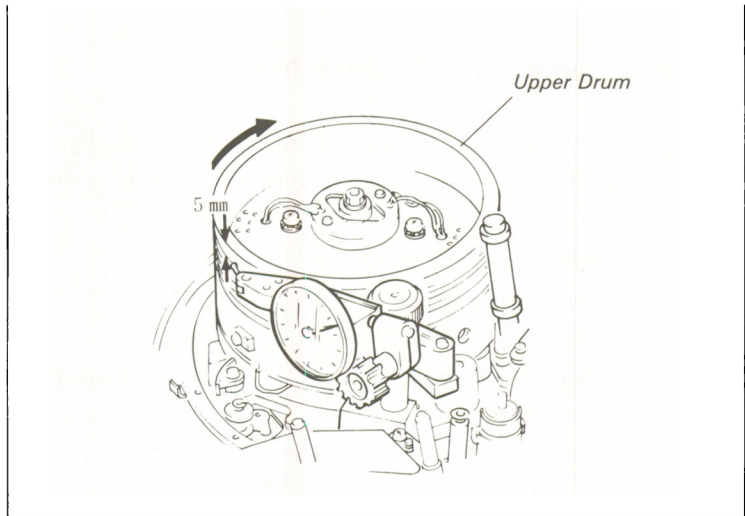
- (1) Unsolder the four leads of the video head from the printed circuit board. Remove the two fixing screws and then remove the Upper Drum Assembly from the Head Drum Assembly.
- (2) Clean the matching surfaces of the flange and new Upper Drum Assembly with a cloth moistened with cleaning fluid. (If there is a spacer between the drum and the flange, it should be left on the flange. If the spacer is lost, correct interchangeability cannot be obtained.)
- (3) Place the Upper Drum Assembly as shown in the figure. Thread the two fixing screws snugly but do not tighten them.

Adjustment procedure:

- (1) Remove the S Guard Block. (The connector at the bottom of the S Guard is inserted into the connector on the chassis.)
- (2) Assemble the Drum Eccentricity Gauges (1), (2), (3) and (4) as shown in the figure. Set the assembled gauges on the unit so that the probe tip is positioned at a point about 5 mm from the top edge of the Upper Drum.
- (3) Turn the Upper Drum slowly in the clockwise direction and check that the gauge deflection is within 5 microns during one complete revolution of the Upper Drum. If it is within specification, proceed with the Step (5). If it is not, perform Step (4).



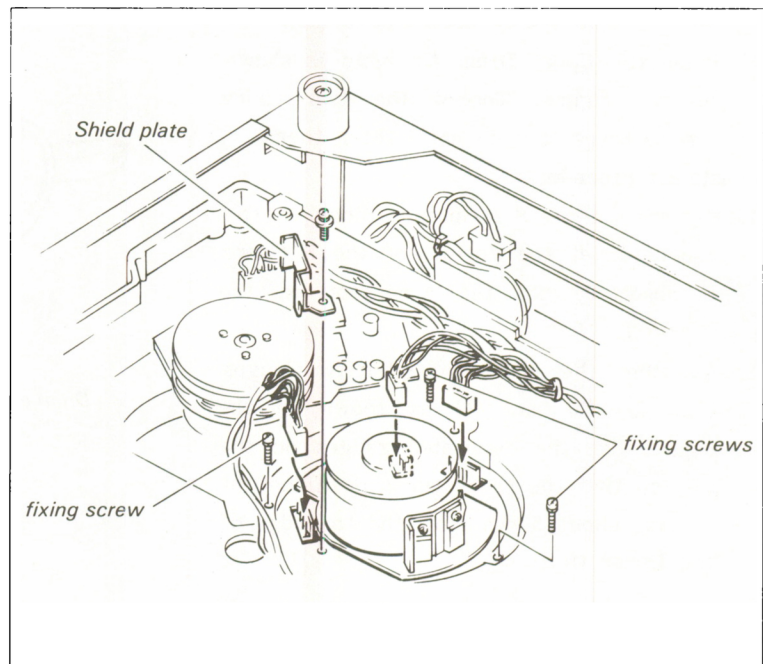
- (4) Tap the inside of the Upper Drum with a nylon hammer or a screwdriver handle until the gauge deflection remains within 5 microns.
- (5) After the adjustment, alternately tighten the two fixing screws of the Upper Drum. (Tightening torque: 14 to 16 kg-cm)
- (6) After tightening the screws, check that the gauge deflection is within 5 microns.
- (7) Solder the four leads from the video heads to the printed circuit board as shown in the figure.
- (8) Install the S Guard Block. (Insert the connector at the bottom of the S Guard Block securely into the connector on the chassis.)
- (9) Adjust as described in Section 4-11.



4-2. REPLACEMENT OF THE DRUM ASSEMBLY

Replacement procedure:

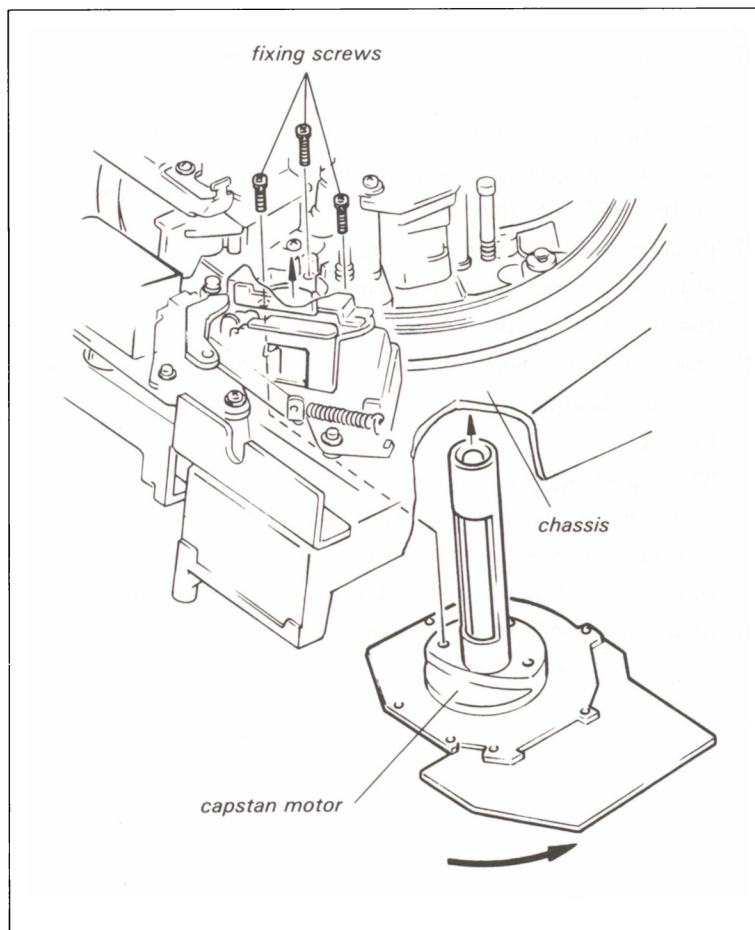
- (1) Remove the Shield Plate.
- (2) Disconnect the three connectors of the drum assembly on the back of the unit.
- (3) Remove the three fixing screws which hold the drum.
- (4) Install the drum on the base while turning the drum assembly in the clockwise direction when viewed from top of the unit.
- (5) Connect the three connectors.
- (6) Tighten the fixing screw of the Shield Plate.
- (7) Adjust as described in Section 4-11.



4-3. REPLACEMENT OF THE CAPSTAN MOTOR

Replacement procedure:

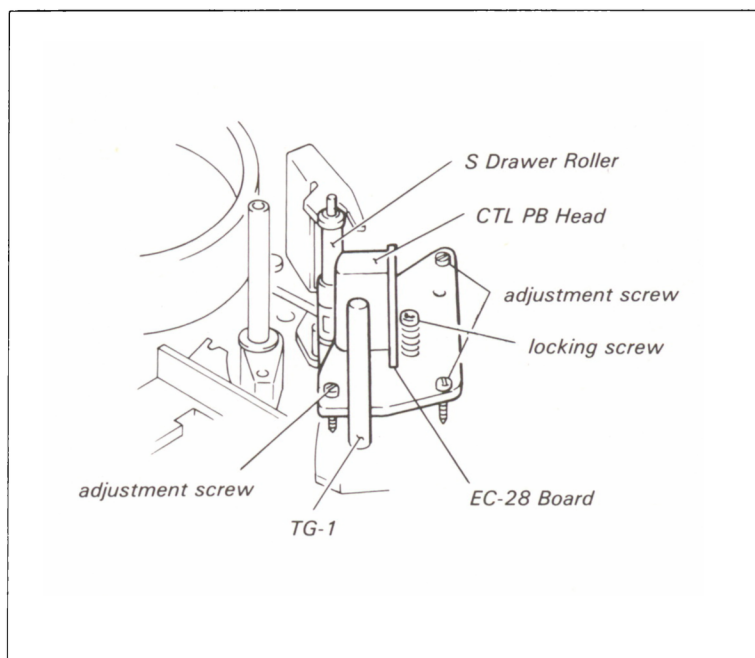
- (1) Remove the Capstan Motor from the unit.
- (2) Install the new Capstan Motor and thread the three fixing screws snugly but do not tighten them.
- (3) Tighten the fixing screws while turning the Capstan Motor in the direction of the arrow.
- (4) Adjust as described in Section 4-11.



4-4. REPLACEMENT OF THE CTL HEAD

Replacement procedure:

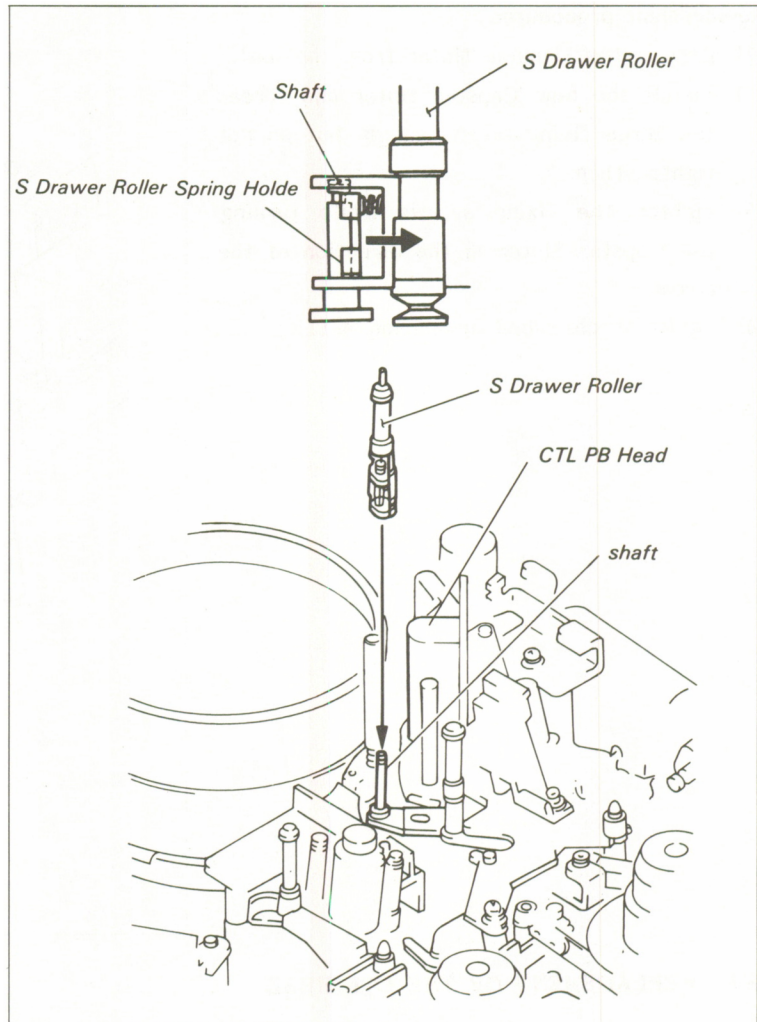
- (1) Disconnect CN341 on the EC-28 Board.
- (2) Remove the locking screw and remove the CTL PB Head Block from the unit. Never tighten or loosen the three adjustment screws.
- (3) Remove the two fixing screws at the bottom of the bracket and remove the head.
- (4) Remove the EC-28 Board from the head and solder it to the new head.
- (5) Perform steps (1) to (3) in reverse order.
- (6) Adjust as described in Section 4-11.



4-5. REPLACEMENT OF THE S DRAWER ROLLER

Replacement procedure:

- (1) Put the unit into the EJECT completion mode without a cassette tape.
- (2) Turn the pulley of the Gear Box by hand until the S Drawer Roller comes in front of the CTL PB Head.
- (3) Remove the S Drawer Roller from the shaft while pushing the spring holder in the direction of the arrow.
- (4) Smear a little Sony Grease in the notch at the bottom of the new S Drawer Roller.
- (5) While pushing the spring holder in the direction of the arrow, install the new S Drawer Roller onto the shaft until the S Drawer Roller locks to the shaft.
- (6) Adjust as described in Section 4-11.



4-6. REPLACEMENT / ADJUSTMENT OF THE TAPE GUIDES ON THE THREADING RING

- . There are three tape guides on the Threading Ring. This section describes the replacement of the three tape guides and the width adjustment of the two tape guides.

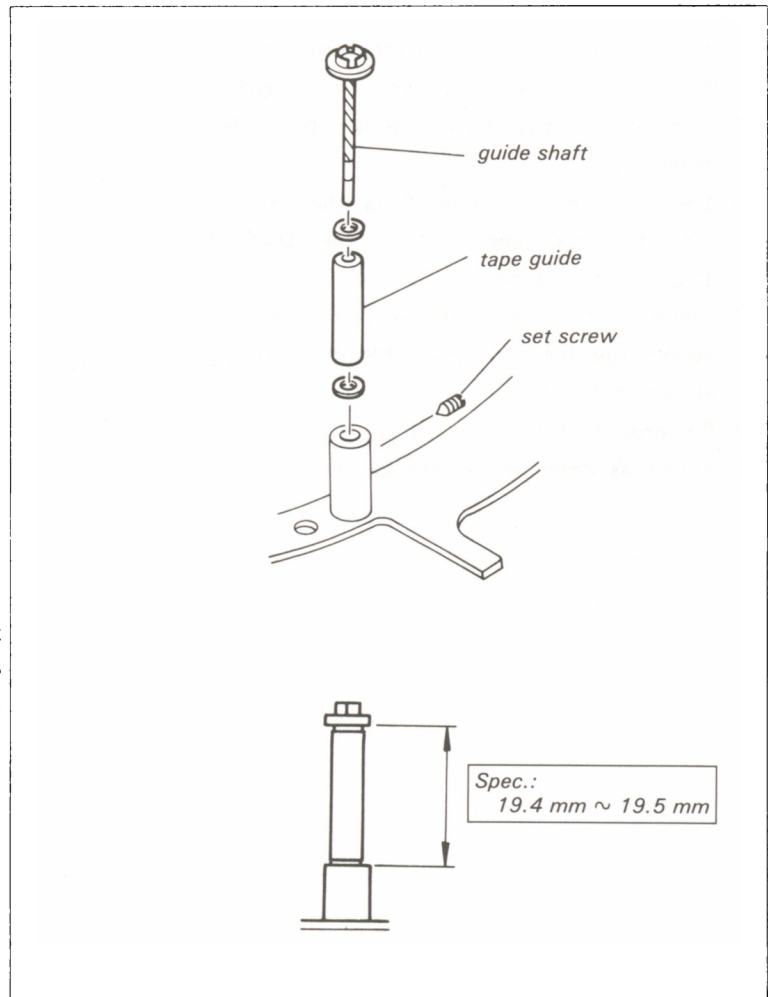
tool: slide vernier callipers of equivalent
L-shaped hexagonal wrench
(across flat has 1.27 mm)

Replacement procedure:

- (1) Loosen the set screw of the boss and remove the guide shaft.
- (2) Clean the guide shaft with a cloth moistened with cleaning fluid.
- (3) Assemble the guide.
- (4) Adjust the height of the sub-ring guide as shown in the figure.
- (5) Adjust as described in Section 4-11.

Adjustment procedure:

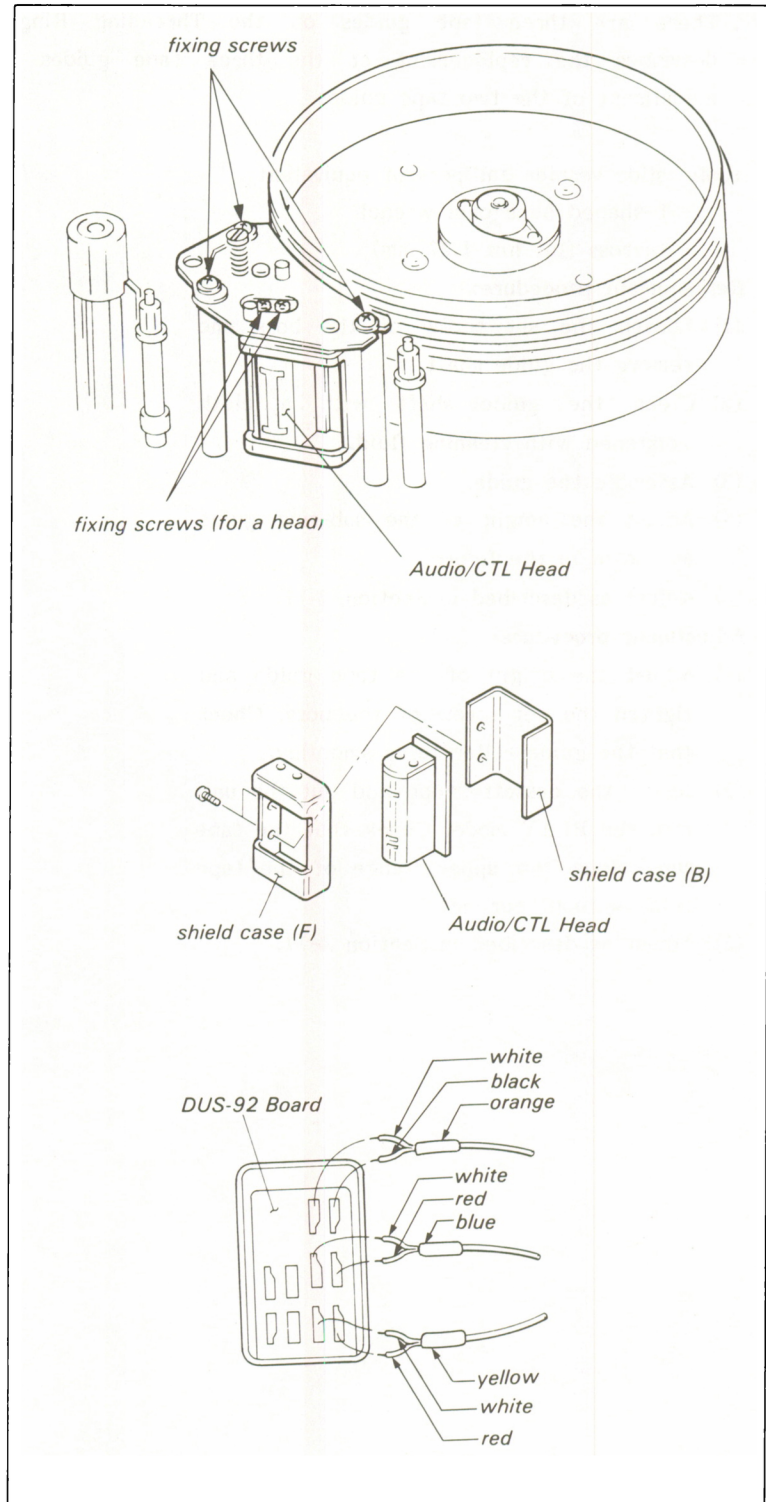
- (1) Adjust the height of the tape guide and tighten the set screw of the boss. Check that the guide roller turns smoothly.
- (2) Insert the cassette tape and put the unit into the PLAY mode. Check that the tape runs along the upper flange of the tape guide without curling.
- (3) Adjust as described in Section 4-11.



4-7. REPLACEMENT OF THE AUDIO/CTL HEAD

Replacement procedure:

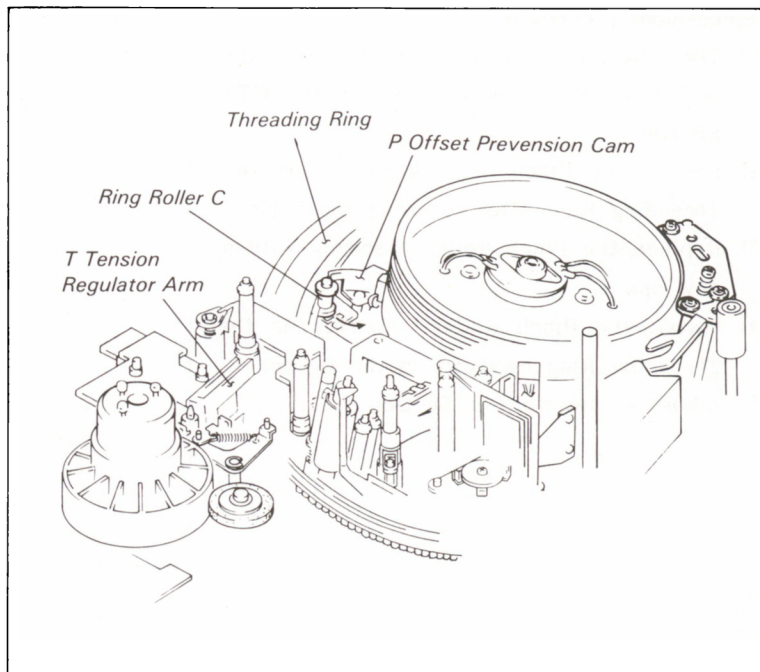
- (1) Remove the Audio/CTL Head Block from the unit after removing the three fixing screws as shown in the figure.
- (2) Remove the Audio/CTL Head and the shield case (F and B) after removing the two fixing screws as shown in the figure.
- (3) Remove the two fixing screws from the shield case.
- (4) Unsolder the six leads from the printed circuit board and remove the DUS-92 Board from the head.
- (5) Replace the head with a new one and solder the leads to the DUS-92 Board as shown in the figure.
- (6) Perform steps (1) to (3) in reverse order.
- (7) Adjust as described in Section 4-11.



4-8. REPLACEMENT OF THE THREADING RING

Replacement procedure:

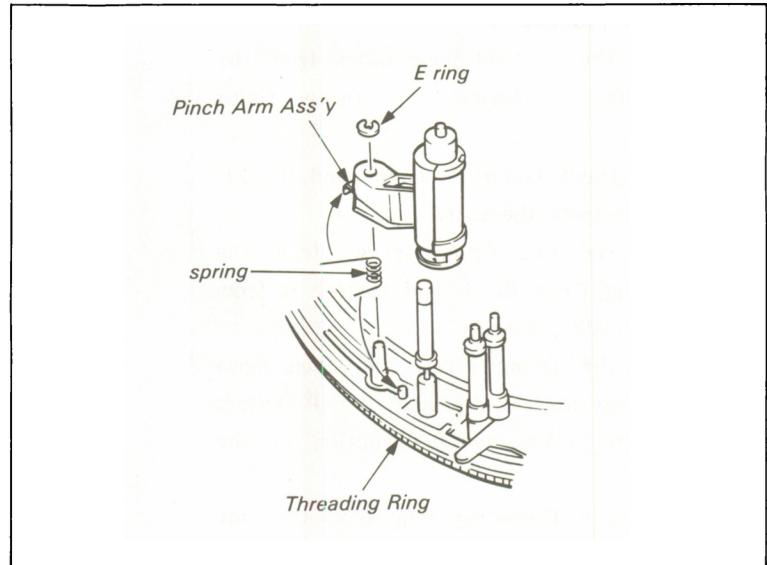
- (1) Remove the E Head Base Block from the unit after removing the three fixing screws.
- (2) Remove the S Guard Assembly and the FR Detector from the unit.
- (3) Loosen the two fixing screws from the Threading Gear Block and remove it from the Threading Ring.
- (4) Loosen the fixing screw and then move the Ring Roller (C) and the P Offset Prevention Cam in the direction of the arrow.
- (5) Remove the Threading Ring from the unit and replace it with a new one.
- (6) Perform steps (1) to (4) in reverse order.
- (7) Adjust as described in Section 4-11.



4-9. REPLACEMENT OF THE PINCH ROLLER

Replacement procedure:

- (1) Turn the pulley of the Gear Box until the S Drawer Roller is in front of the CTL PB Head.
- (2) Remove the Pinch Arm Assembly from the Threading Ring after removing the E ring.
- (3) Replace the Pinch Roller Assembly with a new one.
- (4) Install the Pinch Roller Assembly on the Threading Ring as shown in the figure.
- (5) Adjust as described in Section 4-11.

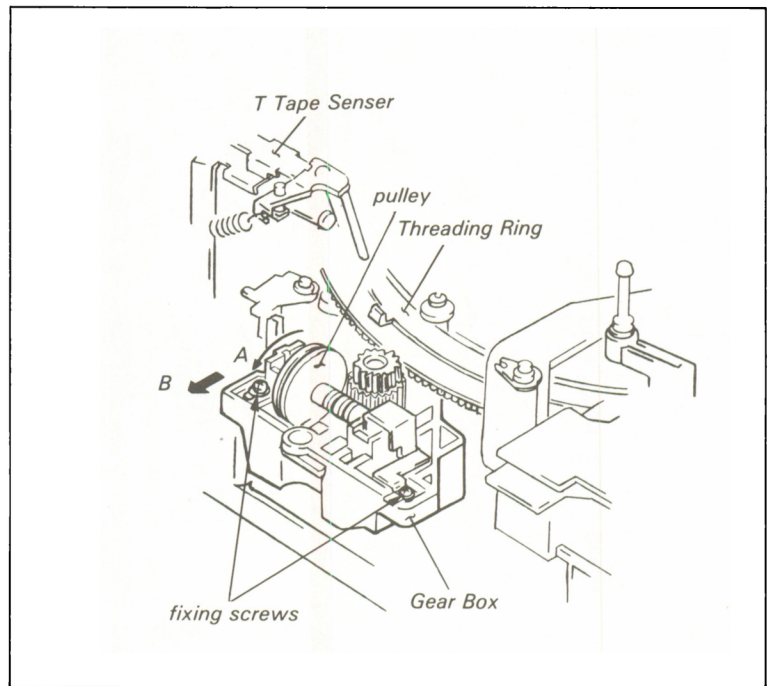


4-10. REPLACEMENT OF THE THREADING GEAR BOX SYSTEM

4-10-1. Replacement of the Threading Gear Box

Replacement procedure:

- (1) Put the unit into the EJECT mode and turn the power OFF.
- (2) Remove the T Tape Sensor from the gear box after removing the fixing screw.
- (3) Remove the two fixing screws of the gear box after turning the pulley 1 revolution in the direction of arrow A. Move the gear box in the direction of arrow B and remove it from the unit.
- (4) Remove the harness from the clamber and disconnect CN511 from the SY-106B Board.
- (5) Replace the gear box with a new one.
- (6) Perform steps (3) and (4) in reverse order.
- (7) Put the gear box on the chassis and thread the two fixing screws snugly but do not tighten them. Tighten the two fixing screws of the gear box after meshing the Threading Ring to the gear.
- (8) Adjust as described in Section 4-11.

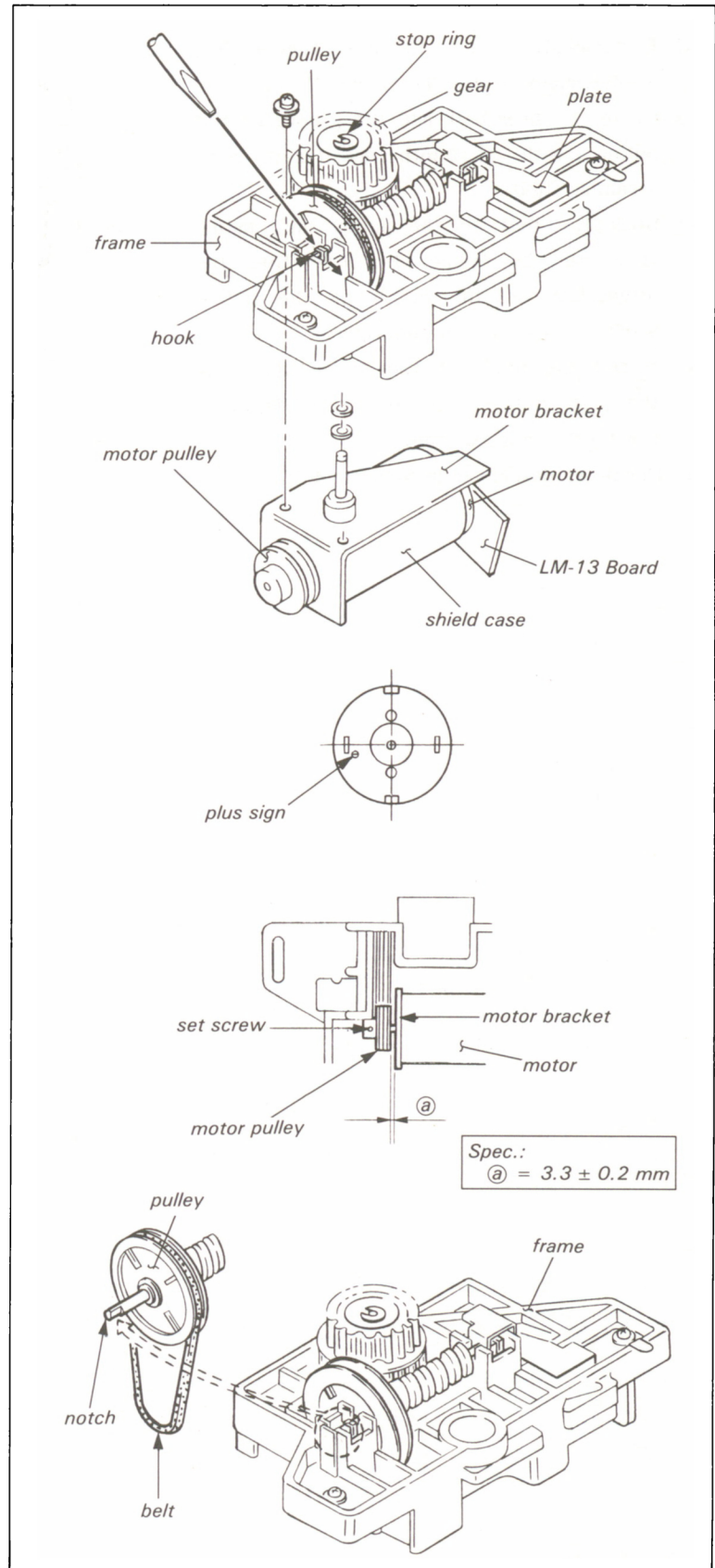


4-10-2. Replacement of the Threading Motor

Tool: L-shaped hexagonal wrench
(across flat has 1.5 mm)

Replacement procedure:

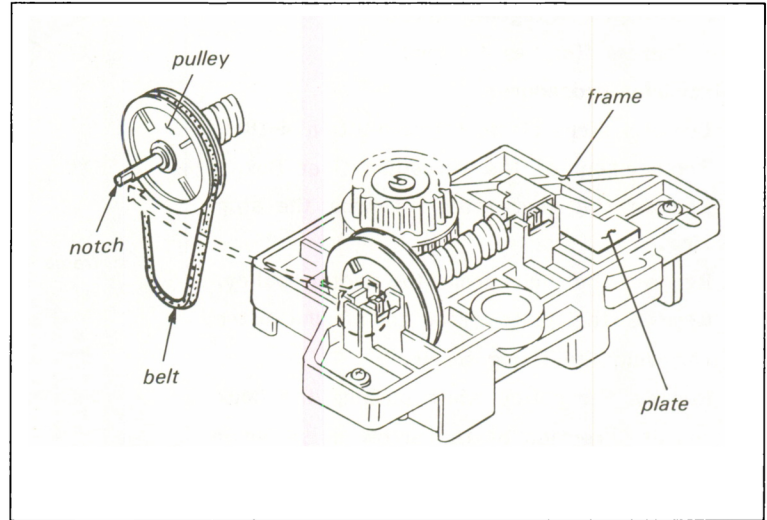
- (1) Perform steps (1) to (4) of Section 4-10-1, Replacement of the Threading Gear Box.
- (2) Remove the gear after removing the stop ring.
- (3) Remove the belt from the motor pulley. Remove the plate from the frame after removing the fixing screw.
- (4) Remove the pulley while pushing the hook in the direction of the arrow as shown in the figure.
- (5) Remove the motor block from the frame after removing the two fixing screws.
- (6) Loosen the set screw and remove the motor pulley.
- (7) Remove the motor from the motor bracket after removing the two fixing screws.
- (8) Remove the shield case and unsolder the LM-13 Board. Replace the motor with a new one.
- (9) The pole of the motor is as shown in the figure. Solder the plus terminal of the motor to the plus pad of the LM-13 Board.
- (10) Install the shield case to the motor.
- (11) Install the motor to the frame as shown in the figure. Perform steps (4) to (6) in reverse order. Check that the clearance between the motor pulley and the bracket meets the required specification.
- (12) Hook the belt to the pulley and install the pulley on the frame. Be sure that the orientation of the notch of the pulley shaft is as shown in the figure.
- (13) Hook the belt to the motor pulley. Check that the belt is not twisted.
- (14) Check as described in Section 4-11.



4-10-3. Replacement of the Threading Belt

Replacement procedure:

- (1) Perform steps (1) to (3) in Section 4-10-2, Replacement of the Threading Motor.
- (2) Clean the new belt and the groove of the pulley with a cloth moistened with cleaning fluid.
- (3) Hook the belt to the pulley and install them to the frame. Be sure that the orientation of the notch of the pulley shaft is as shown in the figure.
- (4) Install the plate to the frame and hook the belt to the Motor pulley. Check that the belt is not twisted.
- (5) Check as described in Section 4-11.



4-11. ITEMS TO BE ADJUSTED AFTER MAIN PARTS REPLACEMENT

(Numbers in parenthesis refer to Section Nos.)

Replacement of Threading Ring

Threading Ring Rotation Adjustment (5-3-1) —————> Gear Box Position Adjustment (5-3-2) —————>
FR Detector Block Mounting Position Adjustment (5-3-4) —————> Pinch Roller Position
Adjustment (5-3-3) —————> Pinch Lever Pre-set Adjustment (5-4-1) —————> Pinch Roller
Pre-set Adjustment (5-4-2) —————> Leaf Spring Position Adjustment (5-9) —————> F FWD/REW Modes
Tape Path Adjustment (7-1) —————> T Correction Guide Slantness Adjustment (7-2) —————> Tape
Path Adjustment Around Pinch Roller (7-6) —————> PLAY Mode Tape Path Adjustment (1) (7-3)
—————> PLAY Mode Tape Path Adjustment (2) (7-4) —————> REV Mode Tape Path Adjustment (7-5)
—————> Video Tracking Adjustment (7-7-1) —————> CTL PB Head Height/Azimuth/Zenith Adjustments
(7-7-2) —————> Video Tracking Adjustment (check) (7-7-1)

Replacement of Pinch Roller

Pinch Roller Self Alignment Adjustment (5-3-3) —————> Pinch Roller Pre-set Adjustment (5-4-2) —>
—————> PLAY Mode Tape Path Adjustment (2) (7-4) —————> REV Mode Tape Path Adjustment (7-5) —>
—————> Tape Path Adjustment Around Pinch Roller (7-6) —————> Video Tracking Adjustment
(check)(7-7-1)

Replacement of Take-up Reel Table

Reel Table Height and Vertical Play Adjustment (5-1-2) —————> T Brake Torque Adjustment
(6-1-2) —————> REW Brake Torque Adjustment (6-1-3) —————> F FWD/REW Torque Adjustment (6-2)
FWD Torque Adjustment (6-3) —————> F FWD/REW Modes Tape Path Adjustment (7-1)

Replacement of Supply Reel Table

Reel Table Height and Vertical Play Adjustment (5-1-2) —————> S Brake Torque Adjustment
(6-1-1) —————> F FWD/REW Torque Adjustment (6-2) —————> REV Torque Adjustment (6-4) —————> FF
Back Tension Adjustment (6-5) —————> FWD Back Tension Adjustment (6-6) —————> Video Tracking
Adjustment (check) (7-7-1)

Replacement of Brake Band

FF Back Tension Adjustment (6-5) —————> FWD Back Tension Adjustment (6-6)

Replacement of Capstan Motor

Pinch Lever Right Angle Adjustment (5-10) —————> Pinch Roller Self Alignment Adjustment
(5-3-3) —————> Capstan Search Speed Adjustment —————> Capstan FWD/REV Detector Adjustment
—————> Capstan Free Speed Adjustment —————> Capstan Stop Servo Adjustment —————> PLAY Mode
Tape Path Adjustment (2) (7-4) —————> REV Mode Tape Path Adjustment (7-5) —————> Tape Path
Adjustment Around Pinch Roller (7-6) —————> Video Tracking Adjustment (check)(7-7-1)

Replacement of Threading Motor

Gear Box Position Adjustment (5-3-2)

Replacement of Reel Motor

FWD Torque Adjustment (6-3) —————> REV Torque Adjustment (6-4)

Replacement of CTL PB Head

CTL PB Head Height/AZimuth/Zenith Adjustments (7-7-2) —————> Video Tracking Adjustment (check) (7-7-1)

Replacement of Audio/CTL Head

Audio Head Height Adjustment (7-7-3) —————> Audio Head Azimuth Adjustment (7-7-5) —————>
Video Tracking Adjustment (7-7-1) —————> Audio Head Height Adjustment (7-7-3) —————> Audio
Head Azimuth Adjustment (7-7-5) —————> Audio Head Phase Adjustment (7-7-6) —————> Audio/CTL
Head Position Adjustment (7-7-7) —————> Audio System Alignment (all of Section 10)

Replacement of Drum Assembly

Tracking Adjustment (7-7) —————> F FWD/REW Modes Tape Path Adjustment (7-1) —————> PLAY Mode Tape
Path Adjustment (2) (7-4) —————> REV Mode Tape Path Adjustment (7-5) —————> Video Head
Dihedral Adjustment (7-8) —————> Drum AFC Level Adjustment —————> Drum AFC Transient Adjustment
—————> Switching Position Adjustment

Replacement of Upper Drum Assembly

Replacement of Upper Drum (4-1) —————> Tracking Adjustment (7-7) —————> F FWD/REW Modes Tape Path
Adjustment (7-1) —————> PLAY Mode Tape Path Adjustment (2) (7-4) —————> REV Mode Tape Path
Adjustment (7-5) —————> Video Head Dihedral Adjustment (7-8) —————> PB RF Amplifier Adjustment

SECTION 5

LINK AND DRIVE SYSTEM ALIGNMENT

5-1. REEL TABLE SYSTEM ADJUSTMENT

5-1-1. Cassette Holder Position Adjustment

Tool: Reel table height check base jig
Thickness gauge
L-shaped hexagonal wrench
(across flat has 1.27 mm)

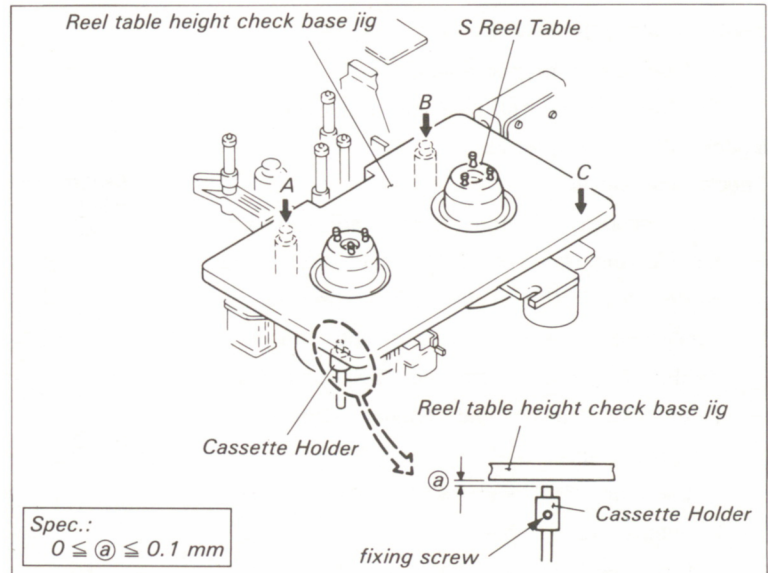
Mode: EJECT completion

Check procedure:

- (1) While lightly pushing the Reel Table Height Check Base Jig marked (A), (B) and (C) toward the chassis, check that the clearance between the base jig and the cassette holder meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the Cassette Holder to meet the required specification.



5-1-2. Reel Table Height and Vertical Play Adjustment

- . The height of the reel table is the reference for the tape threading system and the tape path system. This Adjustment should be performed very carefully.

Tool: Reel table height check base jig
Reel table height check jig
Slide vernier callipers or equivalent

Mode: EJECT completion

Check procedure:

- (1) The probes of the Reel Table Height Check Jig marked "SO" and "TO" can slide over the reel table, leaving a clearance between the jig and the reel table. The probes marked "SX" and "TX" meet the flange and cannot slide over the reel table.
 - . Use the "SO" and "SX" probes for the Supply Reel Table.
 - . Use the "TO" and "TX" probes for the Take-up Reel Table.
- (2) After tighten the fixing screw of the top of the reel table, push up and press down the reel table. Check that the vertical play meets the required specification.

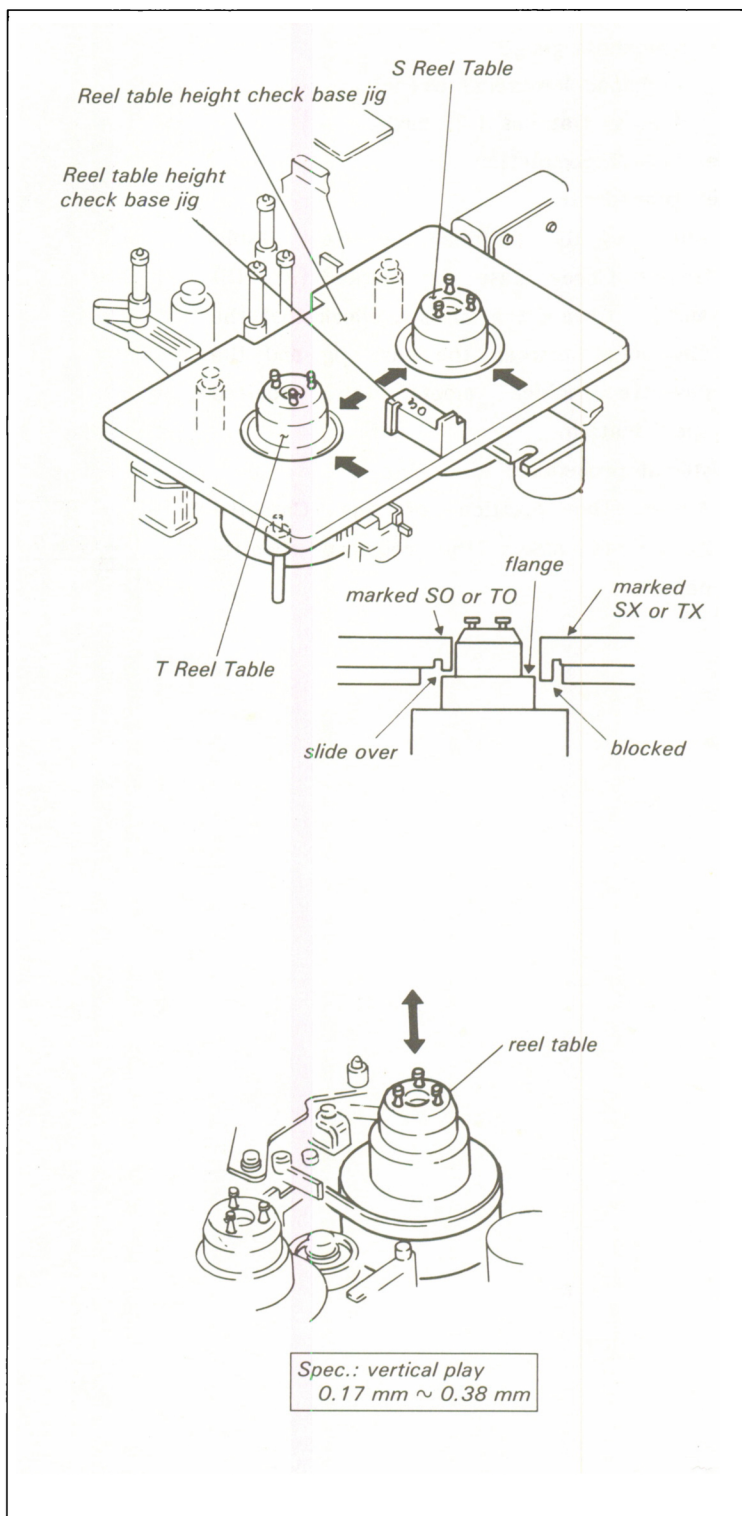
Adjustment procedure:

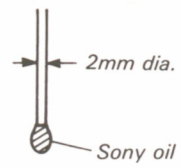
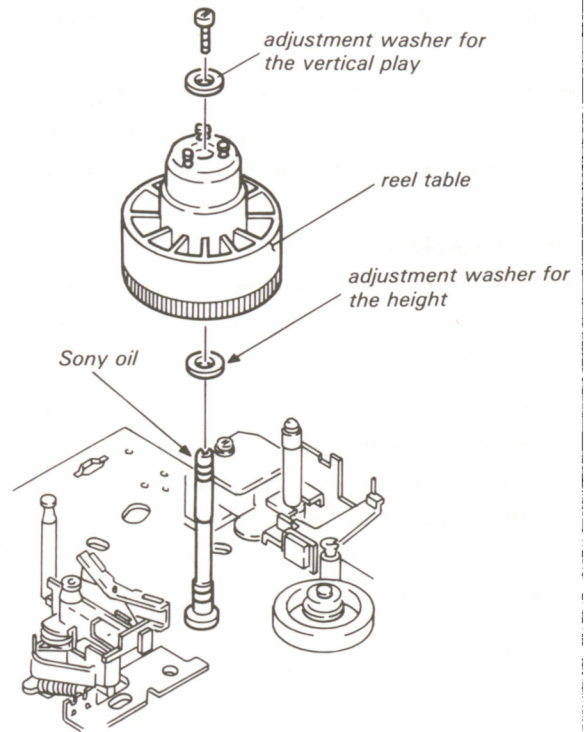
- (1) Place the washer under the reel table and adjust the height of the reel table.
- (2) Place the washer on the reel table and adjust the vertical play of the reel table.

NOTE :When the reel table is removed and its height is adjusted with a washer, drop a drop of Sony oil on the reel shaft. (A drop of Sony oil is the amount that is scooped by a 2 mm dia. twing as shown in the figure.)

. Adjustment poly-slider washer:

3-645-567-11	6 mm dia.	0.05 mm thick
3-701-444-01	6 mm dia.	0.13 mm thick
3-701-444-11	6 mm dia.	0.25 mm thick
3-701-444-21	6 mm dia.	0.5 mm thick





5-2. T DRAWER ARM ADJUSTMENT

5-2-1. T Drawer Arm EJECT Position Adjustment

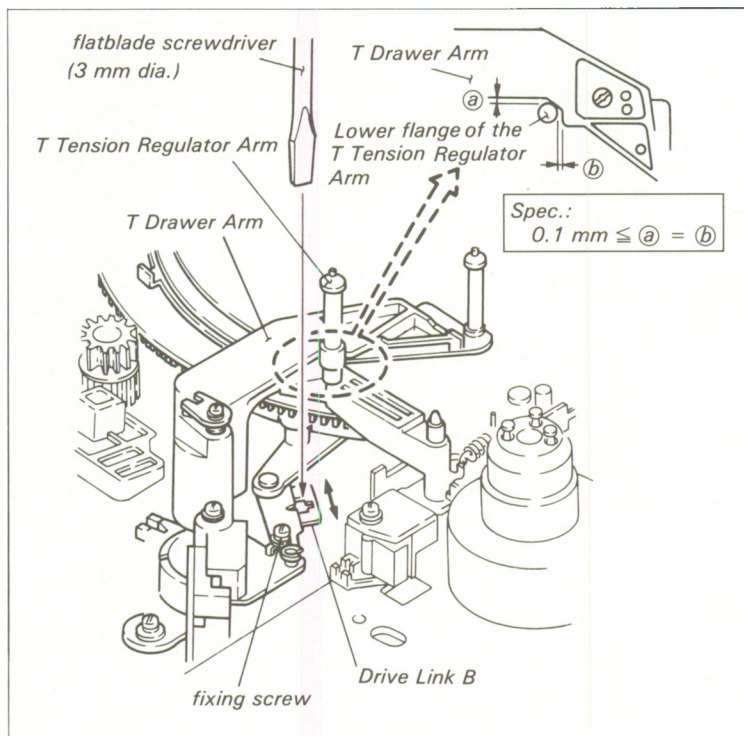
Mode: Put the unit into the FR-STOP mode without a cassette tape. And then put the unit into the EJECT completion mode.

Check procedure:

- (1) Check that the clearance between the lower flange of the T Tension Regulator Arm and the T Drawer Arm meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the Drive Link (B) Ass'y with a flatblade screwdriver (3mm dia.) to meet the required specification.



5-2-2. Unthread-end Switch Position Adjustment

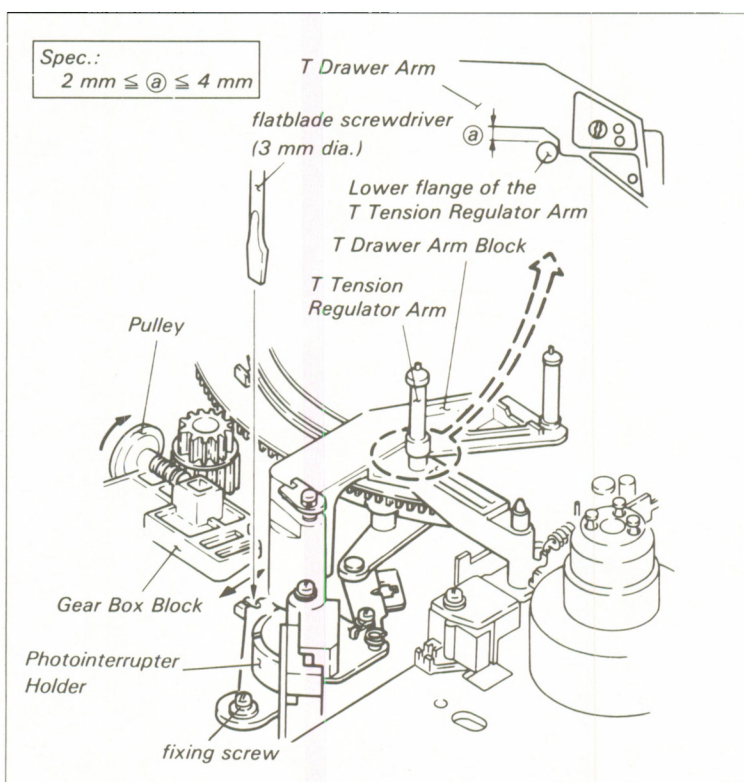
Tool: Black vinyl tape
(1 cm x 1.5 cm)

Preparation:

- (1) Put the unit into the FR-STOP mode and turn the power OFF.
- (2) Remove the Pinch Press Lever Spring from the bracket of the FR Detector Block with tweezers.
- (3) Remove the FR Detector Block and cover the D2 photointerrupter (FR-UNTHREAD END Detector) with the black vinyl tape. (The FR Detector is put into the FR-STOP mode.)

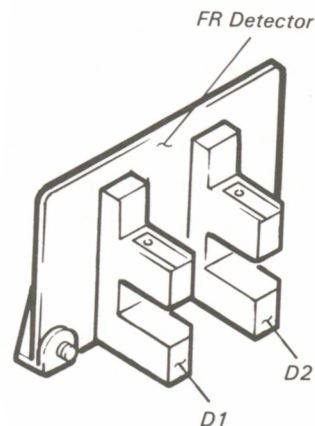
Check procedure:

- (1) Turn the power ON and rotate the pulley of Gear Box Block in the clockwise direction by hand.
- (2) When the relationship of the T Drawer Arm and the T Tension Regulator Arm is as shown in the figure, check that the T Solenoid clicks.



Adjustment procedure:

- (1) Adjust the position of the Photointerrupter Holder with a flatblade screwdriver (3mm dia.) to meet the required specification.
- (2) Turn the power OFF and install FR Detector Block after peeling off the black vinyl tape.
- (3) Perform Section 5-3-4, FR Detector Installing Position Adjustment.
- (4) Hook the Pinch Press Lever Spring to the bracket of the FR Detector Block with tweezers.

**5-3. THREADING SYSTEM ADJUSTMENT****5-3-1. Threading Ring Rotation Adjustment**

- . This adjustment is required only when the Threading Ring is replaced or removed.
- . If the Threading Ring is adjusted to have a narrower clearance, the ring rotation becomes sluggish. If adjusted to have a wider clearance, tape run during threading, FWD, and REV modes will be unstable.

Mode: Check mode: EJECT completion/
Threading/Unthreading
Adjustment mode: EJECT completion

Check procedure:

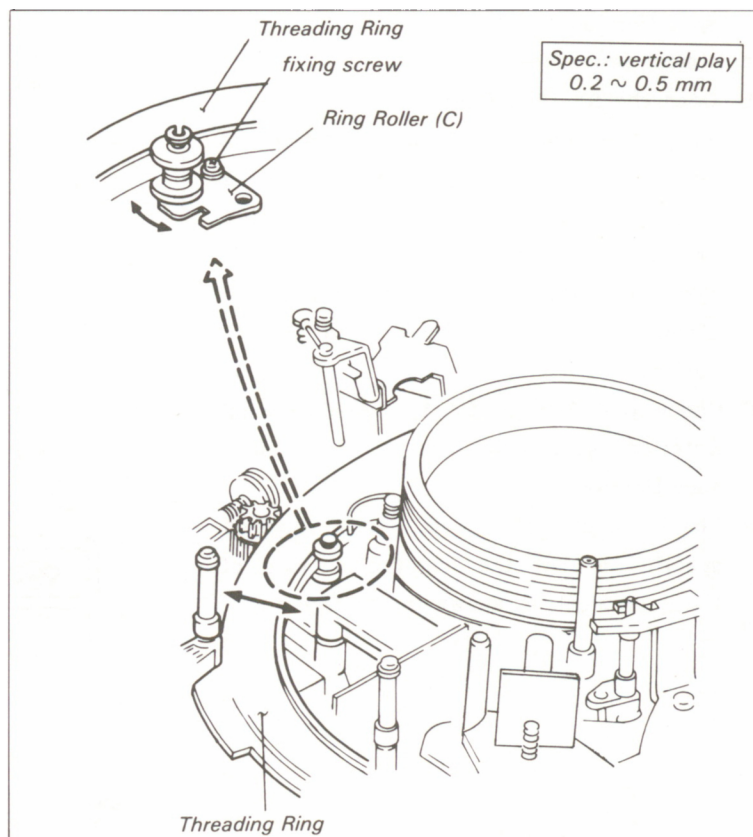
- (1) Put the unit into the EJECT completion mode. Check that the horizontal play meets the required specification when the Threading Ring is pushed in the direction of the arrow.
- (2) Check that the rotation of the Threading Ring during the Threading and Unthreading modes is smooth.

Adjustment procedure:

- (1) Put the unit into the EJECT completion mode.
- (2) Adjust the position of the Ring Roller (C) to meet the required specification.

Reference:

- . Insert a 0.3 mm thick piece of paper between the Threading Ring and the Ring Roller (C).
- . Three pages of this service manual are 0.3 mm thick.



5-3-2. Gear Box Installing Position Adjustment

- . It is required that Section 5-3-1, Threading Ring Rotation Adjustment is correct before initiating this adjustment.

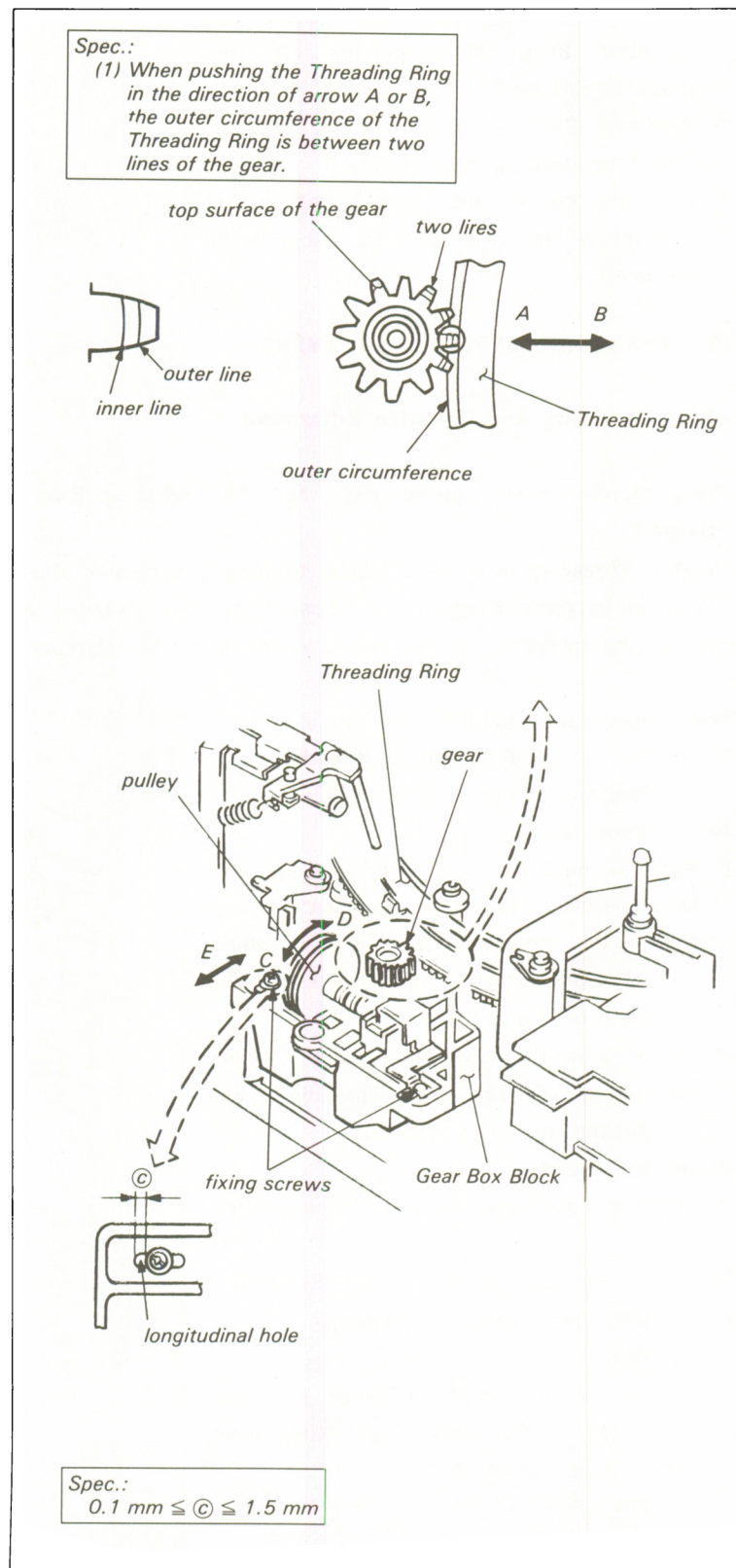
Mode: Put the unit into the EJECT completion mode. Turn the pulley of the Gear Box 1/2 to 1 turn in the direction of arrow C.

Check procedure:

- (1) Put the unit into the EJECT completion mode and then turn the pulley of the Gear Box 1/2 to 1 turn in the direction of arrow C.
- (2) Mark two lines on the top surface of the gear with a black felt tip pen. (Two lines are easy to see during the adjustment.)
- (3) Turn the pulley in the direction of arrow C or D until one of the lines is roughly parallel to the outer circumference of the Threading Ring.
- (4) Check that the relationship between the outer circumference of the Threading Ring and the Gear meets the required specification.

Adjustment procedure:

- (1) Open the SY-106B Board.
- (2) Turn the pulley in the direction of arrow C or D until one of the lines is roughly parallel to the outer circumference of the Threading Ring.
- (3) Move the Gear Box in the direction of arrow E to meet the required specification.
- (4) Check that Section 6-5-1, Threading Ring Rotation Adjustment meets the required specification.
- (5) Check that © meets the required specification at the longitudinal hole of the gear block as shown in the figure.



5-3-3. Pinch Roller Self Alignment Adjustment

. If this adjustment is incorrect, the position and the slantness of the Pinch Roller will not be correct when the Pinch Roller is pressed against the Capstan Shaft. Incorrect adjustment will cause a tape to be damaged.

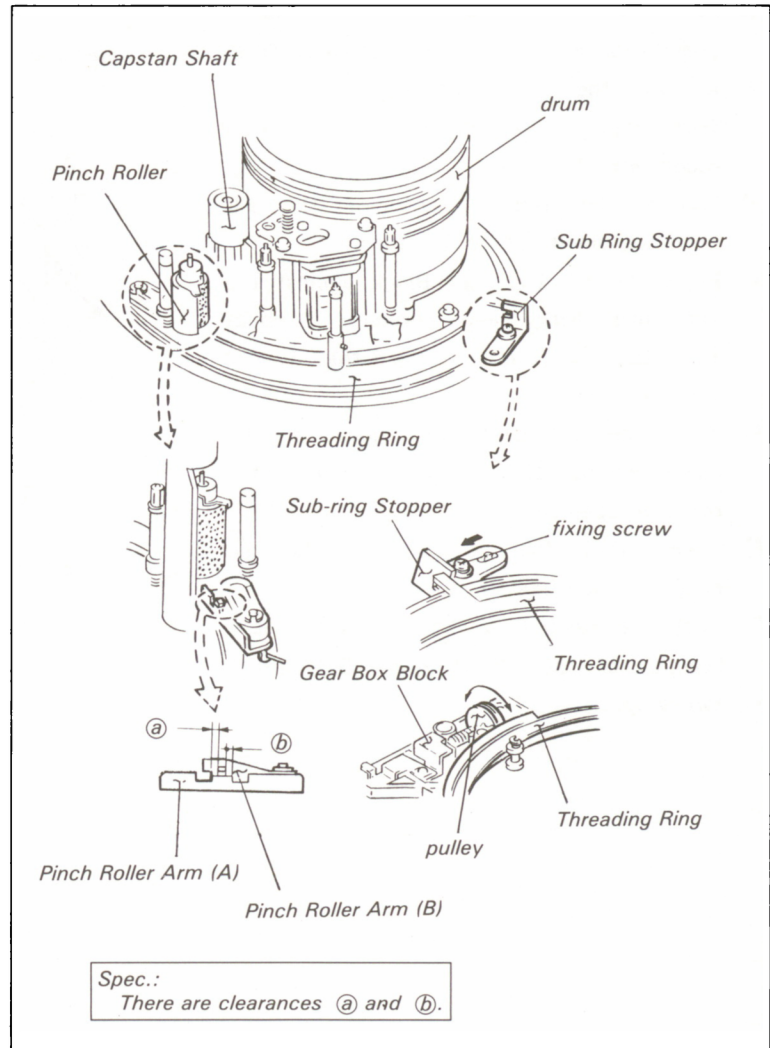
Mode: PLAY mode without a cassette tape

Check procedure:

- (1) Put the unit into the PLAY mode without a cassette tape.
- (2) Check that the relationship of Pinch Roller Arm (A) and Pinch Roller Arm (B) meets the required specification.

Adjustment procedure:

- (1) Put the unit into the PLAY mode without a cassette tape.
- (2) Loosen the fixing screw in the Sub-ring Stopper.
- (3) Turn the pulley of the Gear Box Block in the direction of the arrow to meet the required specification.
- (4) Push the Sub-ring Stopper gently in the direction of the arrow and tighten the fixing screw.
- (5) Put the unit into the EJECT completion mode and then perform the check procedure.



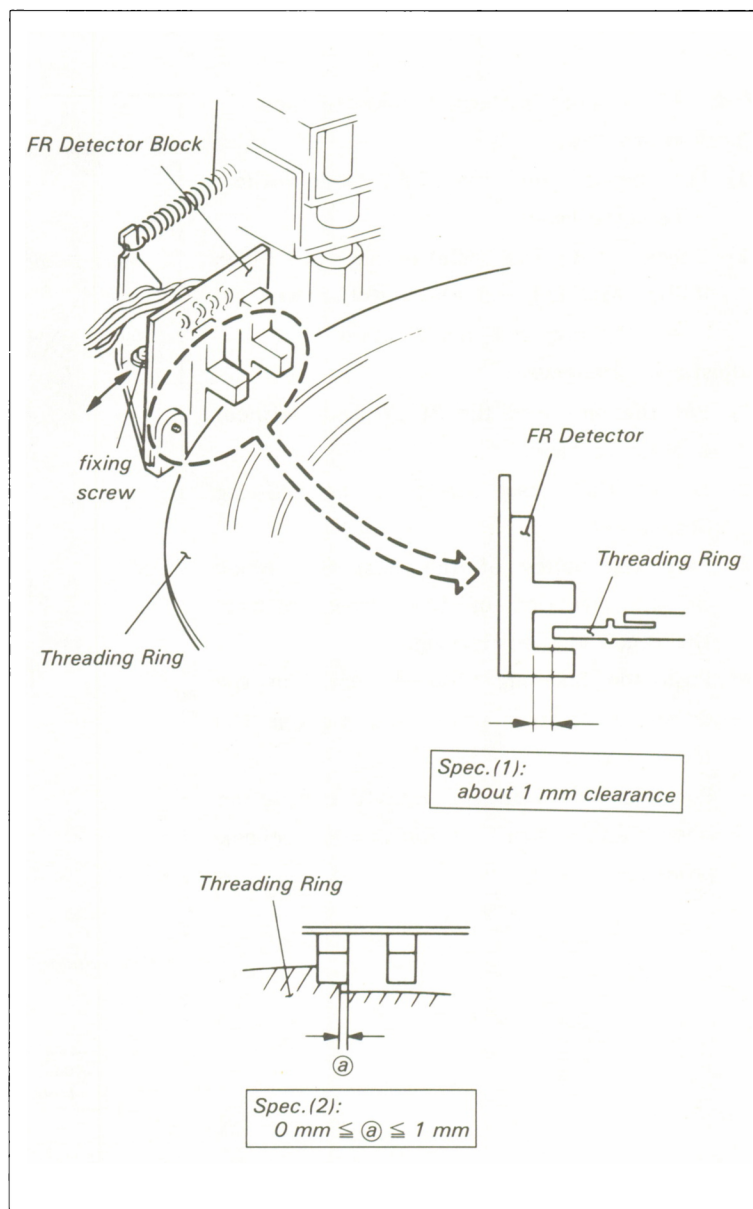
5-3-4. FR Detector Block Installing Position Adjustment

. It is required that the Section 5-3-1, Threading Ring Rotation Adjustment is correct before initiating this adjustment.

Mode: Threading completion mode

Adjustment procedure:

- (1) Put the unit into the Threading completion mode and turn the power OFF.
- (2) Remove the Pinch Press Lever Spring from the bracket of the FR Detector Block with tweezers.
- (3) Loosen the fixing screw of the FR Detector block 1/4 to 1/2 turn.
- (4) Press the FR Detector Block against the Threading Ring, and reverse it about 1mm. (Do not reverse it more than 1.5mm) (Spec.1)
- (5) Move the FR Detector Block in the direction of the arrow to meet the required specification 2.
- (6) Check that the clearance meets the required specification 1.
- (7) Hook the Pinch Press Lever Spring to the bracket of the FR Detector Block with tweezers.



5-4. PINCH LEVER BLOCK ADJUSTMENT

5-4-1. Pinch Lever Preset Adjustment

- . It is required that Section 5-3-1, Threading Ring Rotation Adjustment and Section 6-3-3, Pinch Roller Self Alignment Adjustment are correct before initiating this adjustment.

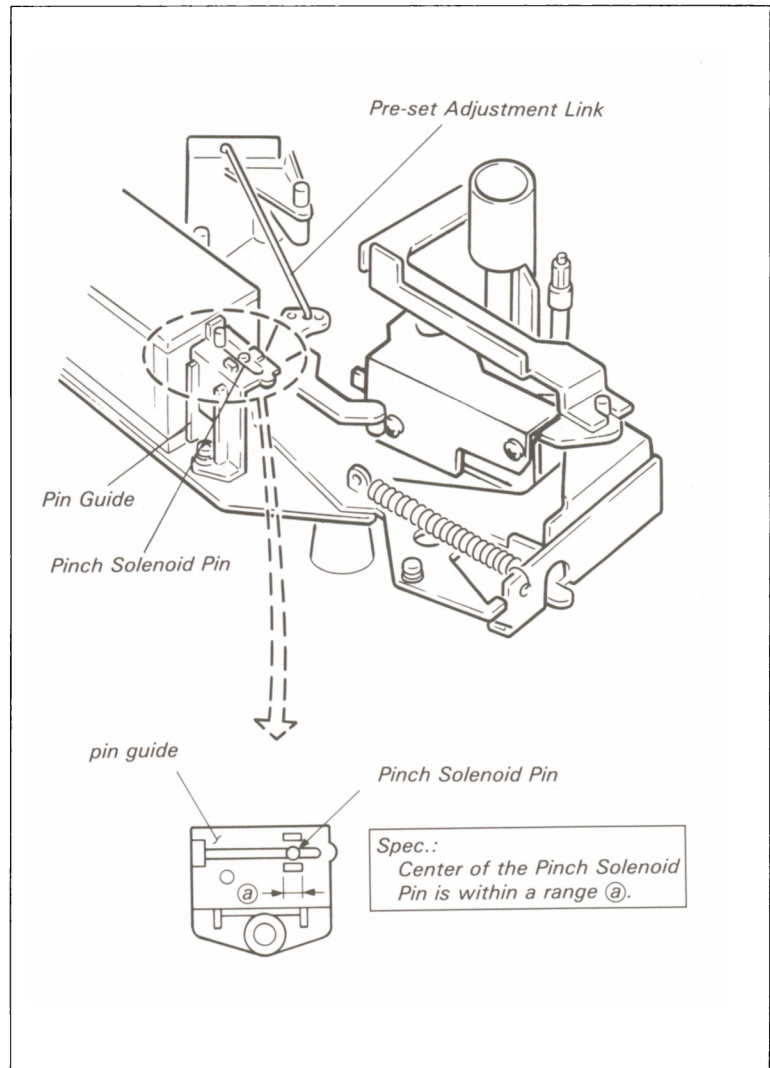
Mode: Turn the power OFF in the PLAY mode

Check procedure:

- (1) Put the unit into the PLAY mode and turn the power OFF. Check that the position of the Pinch Solenoid Pin meets the required specification.
- (2) Turn the power ON and press the PLAY button. After unthreading is complete, check as described in step (1).

Adjustment procedure:

- (1) Adjust the position of the Pinch Solenoid to meet the required specification, referring to Section 5-7-4, Pinch Solenoid Installing Position Adjustment.
- (2) If the specification in Step (1) cannot be obtained, adjust the position of the Sub-ring Stopper to meet the required specification, referring to Section 5-3-3, Pinch Roller Self Alignment Adjustment.
- (3) If the specification in Steps (1) and (2) cannot be obtained, insert the Pinch Lever Preset Adjustment Link into the appropriate hole of the Preset Lever Ass'y to meet the required specification. Perform Steps (1) and (2) again.



5-4-2. Pinch Roller Preset Adjustment

It is required that Section 5-3-1, Threading Ring Rotation Adjustment and Section 5-3-3, Pinch Roller Self Alignment Adjustment are correct before initiating this adjustment.

Tool: Thickness gauge

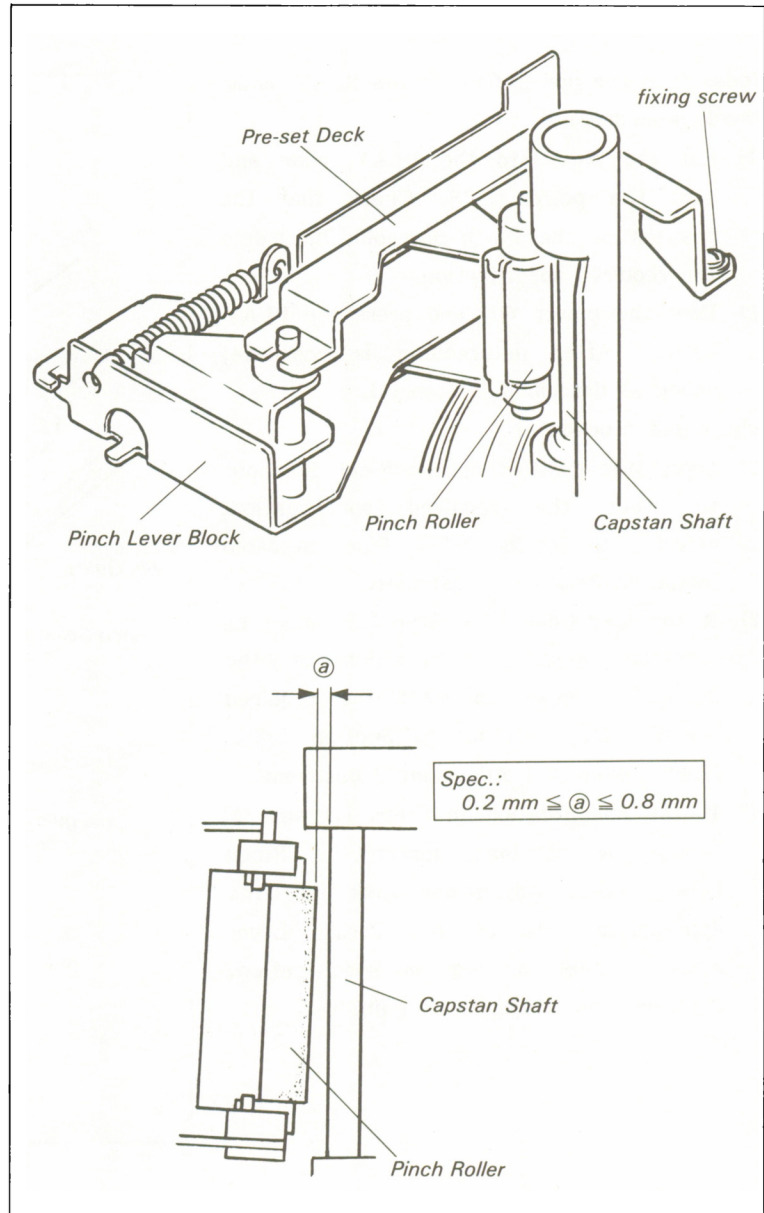
Mode: PLAY mode

Check procedure:

- (1) Check that the clearance between the Pinch Roller and Capstan Shaft meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the Pre-set Deck to meet the required specification.
- (2) Repeat the Threading/Unthreading modes two or three times and check that it meet the required specification.



5-4-3. Pinch Solenoid Block Position Adjustment

Tool: Thickness gauge

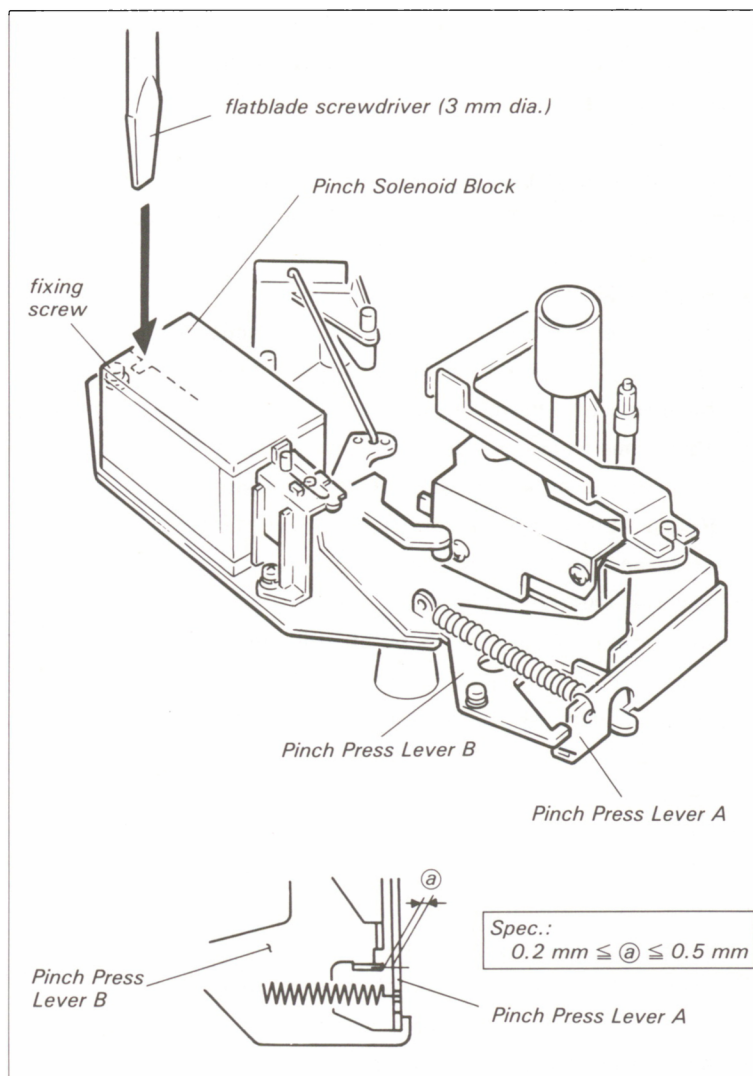
Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a cassette tape and put the unit into the PLAY mode.
- (2) Check that the clearance between Pinch Press Lever A and B meets the required specification.
- (3) Repeat the Unthreading/Threading modes two or three times and check as described in step (2).

Adjustment procedure:

- (1) Put the unit into the PLAY mode. Adjust the position of the Pinch Solenoid Block with a flatblade screwdriver (3 mm dia.) to meet the required specification.
- (2) Perform the check procedures (2) and (3).



5-5. T TAPE SENSOR POSITION ADJUSTMENT

. There are two adjustments in this section. The first is the height adjustment and the second is the adjustment of the clearance between the tape and LED.

Tool: Thickness gauge

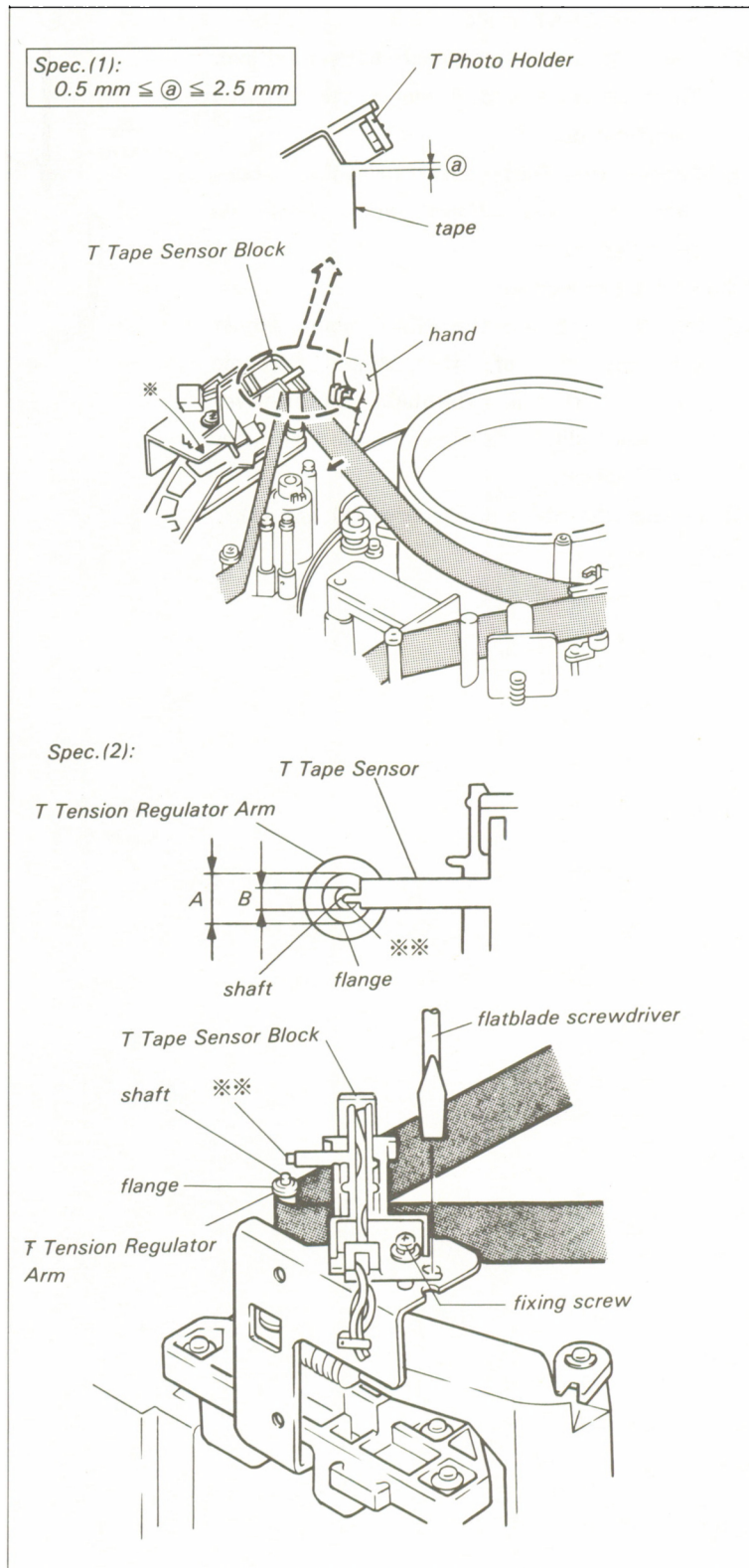
Mode: PLAY and FR STOP modes with a cassette tape

Check procedure:

- (1) Inset the cassette tape and put the unit into the FR STOP mode. Push the tape by hand as shown in the figure. Check that the clearance between top edge of the tape and bottom side of the T Photo Holder Block (black plastic) meets the required specification. (Spec. (1))
- (2) Put the unit into the PLAY mode.
- (3) As viewed from the top of the unit, check that the ※※ of the T Tape Sensor Block is above the upper flange of the T Drawer Arm (within the range "A"). (Spec. (2))

Adjustment procedure:

- (1) Bend the ※ with a pliers to meet the required specification (1). Perform check procedures (2) and (3).
- (2) Loosen the fixing screw of the T Tape Sensor Block 1/2 to 1 turn.
- (3) As viewed from the top of the unit in the PLAY mode, adjust the position of the T Tape Sensor Block with a flatblade screwdriver so that the ※※ of the T Tape Sensor Block is above the shaft of the T Drawer Arm (within the range "B").
- (4) Check that it meets the required specification (1).



5-6. TENSION ARM SYSTEM ADJUSTMENT

5-6-1. S Drawer Roller Block Limiter Adjustment

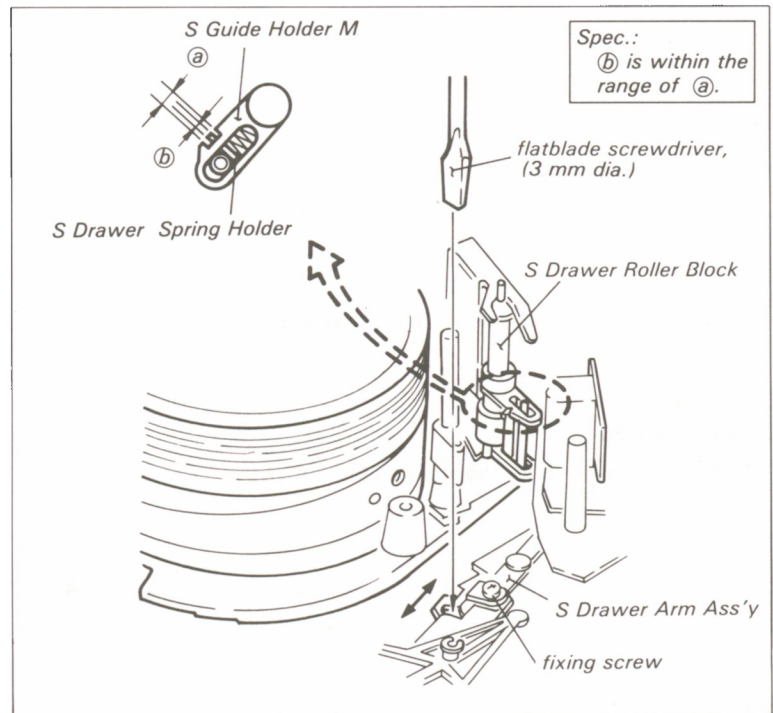
Mode: FR-STOP mode

Check procedure:

- (1) Check that " b " of the S Drawer Spring Holder in the S Drawer Roller Block fits into notch " a " of the S Guide Holder M.

Adjustment procedure:

- (1) Loosen the fixing screw of the S Drawer Arm Ass'y 1/4 to 1/2 turn.
- (2) Adjust the position of the S Drawer Arm Ass'y with a flatblade screwdriver (3 mm dia.) to meet the required specification.



5-6-2. T Tension Regulator Operating Position Adjustment

Mode: FR-STOP mode

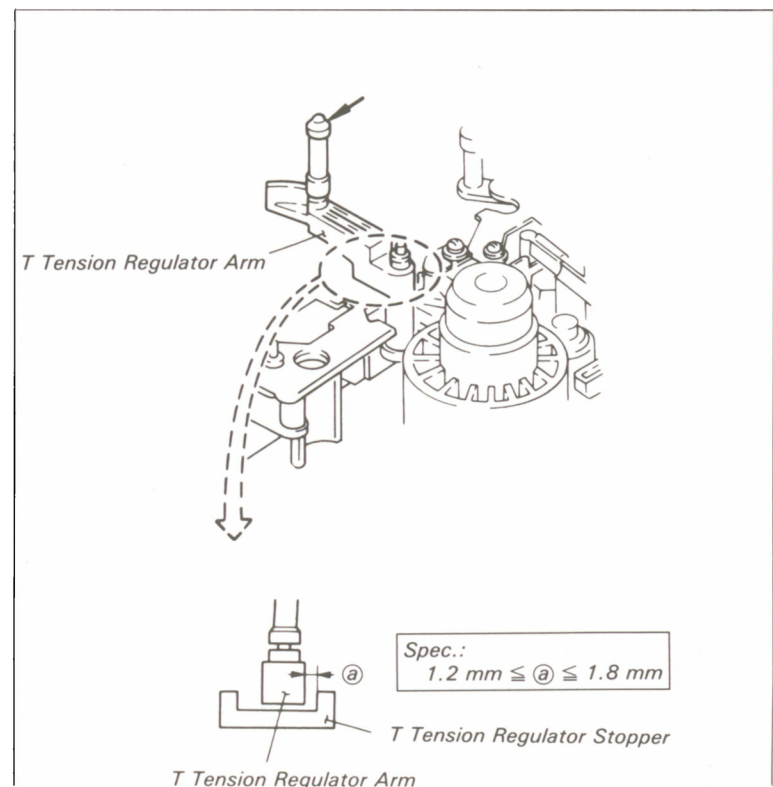
Tool: Thickness gauge

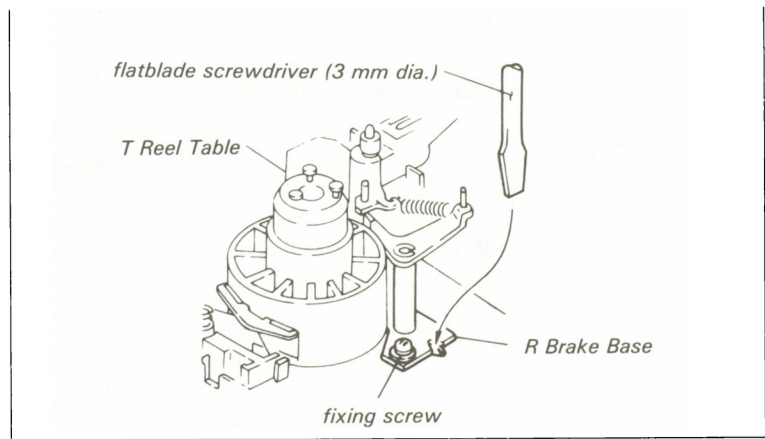
Check procedure:

- (1) Push the T Tension Regulator Arm in the direction of the arrow and remove the finger gently.
- (2) Check that the clearance between the T Tension Regulator Arm and the stopper meets the required specification.

Adjustment procedure:

- (1) Loosen the fixing screw of the R Brake Base 1/4 to 1/2 turn.
- (2) Adjust the position of the R Brake Base with a flatblade screwdriver (3mm dia.) to meet the required specification.





5-6-3. S Tension Regulator Operating Position Adjustment

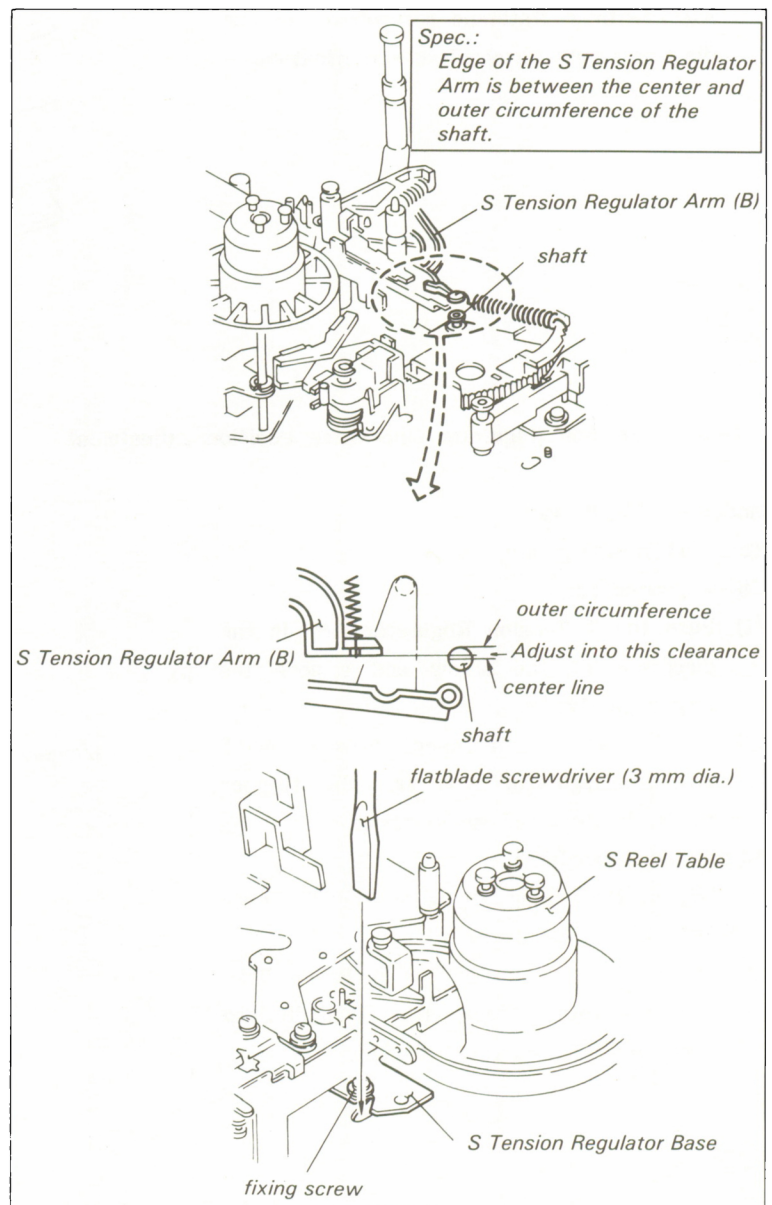
Mode: FF mode

Check procedure:

- (1) Put the unit into the FF mode without a cassette tape.
- (2) Check that the edge of the S Tension Regulator Arm (B) meets the required specification.

Adjustment procedure:

- (1) Loosen the fixing screw of the S Tension Regulator Base 1/4 to 1/2 turn.
- (2) Adjust the position of the S Tension Regulator Base to meet the required specification.



5-6-4. Tension Detector Position Adjustment

Tool: DC voltmeter

Mode: FWD / REV mode

Preparation:

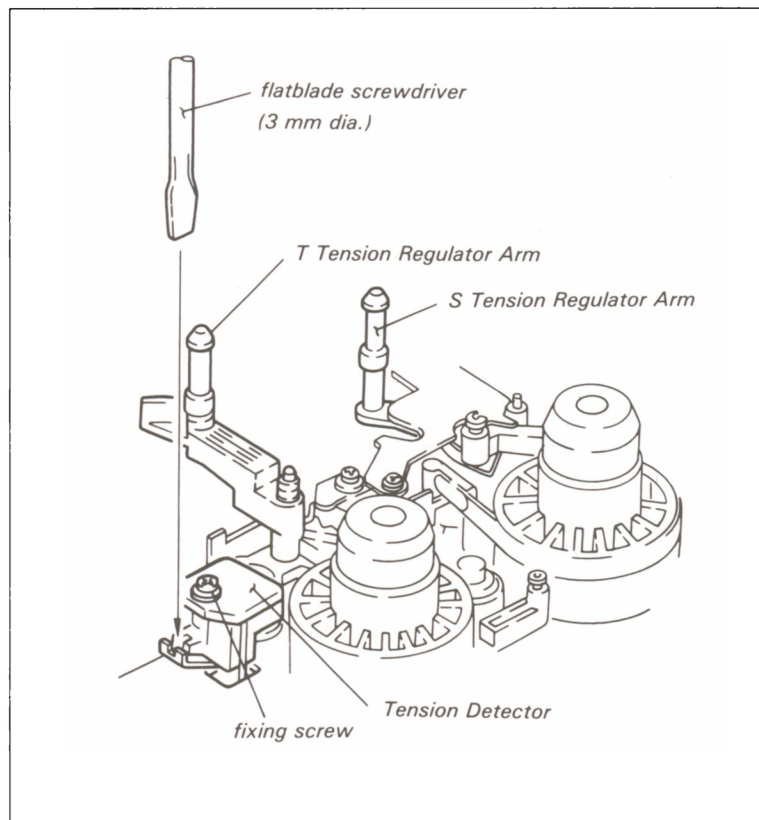
- (1) Connect the dc voltmeter to TP1 on the SY-106B Board.

Check procedure:

- (1) Put the unit into the FWD mode without a cassette tape.
- (2) Push the T Tension Regulator Arm to the right with a hand as far as it will go. Check that the dc voltage is more than 8V.
- (3) Push the T Tension Regulator Arm to the left with a hand as far as it will go. Check that the dc voltage is less than 2.5V.
- (4) Put the unit into the REV mode.
- (5) Push the S Tension Regulator to the right with a hand as far as it will go. Check that the dc voltage is less than 2.5 V.
- (6) Push the S Tension Regulator to the left with a hand as far as it will go. Check that the dc voltage is more than 8 V.

Adjustment procedure:

- (1) Remove the FR Detector Block from the unit.
- (2) Loosen the fixing screw of the Tension Detector 1/4 to 1/2 turn.
- (3) Insert a flatblade screwdriver (3 mm dia) in the notch and adjust the position of the Tension Detector to meet the required specification.
- (4) After adjustment, install the FR Detector.



5-6-5. T Tension Regulator Arm Height Adjustment

Tool: L-shaped hexagonal wrench
(across flat has 1.5 mm)

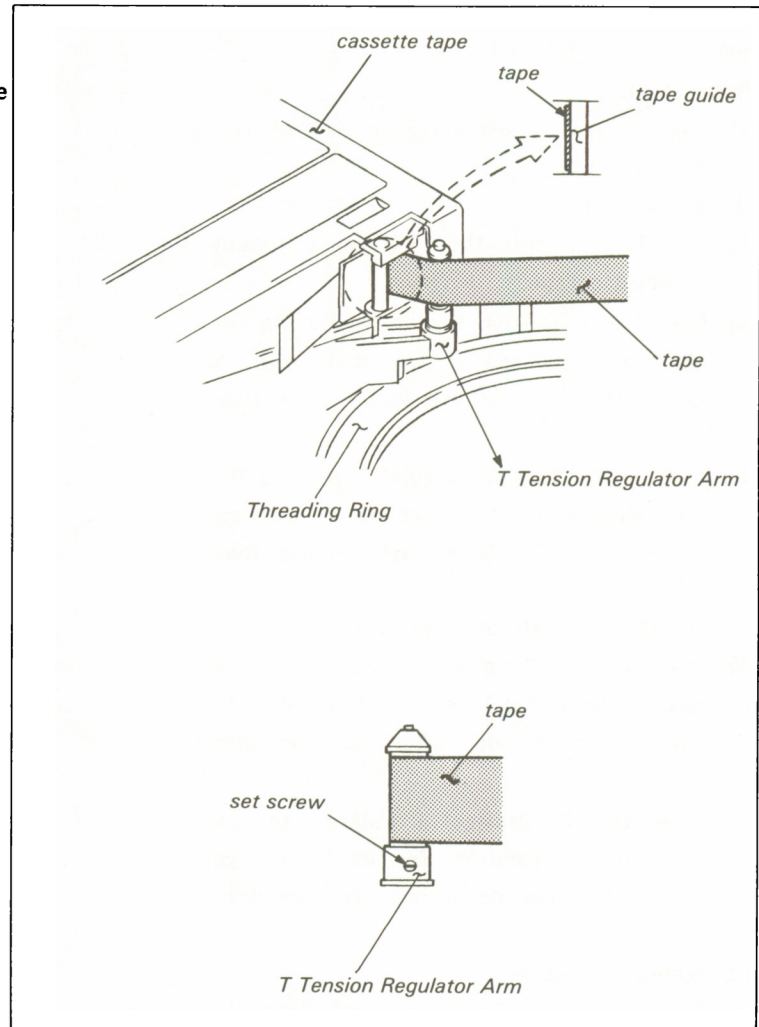
Mode: PLAY / F FWD mode with a cassette tape

Check procedure:

- (1) Insert a cassette tape and put the unit into the PLAY mode.
- (2) Check that the tape runs in the middle of the tape guide in the cassette.
- (3) Check that the tape runs in the middle of the T Tension Detector Guide.
- (4) Put the unit into the F FWD mode.
- (5) Check as described in steps (2) and (3).

Adjustment procedure:

- (1) Loosen the set screw at the lower flange of the T Tension Regulator Arm.
- (2) Adjust the height of the T Tension Regulator Arm to meet the required specification.



5-7. SEARCH SOLENOID SYSTEM ADJUSTMENT

5-7-1. Search Solenoid Installing Position Adjustment

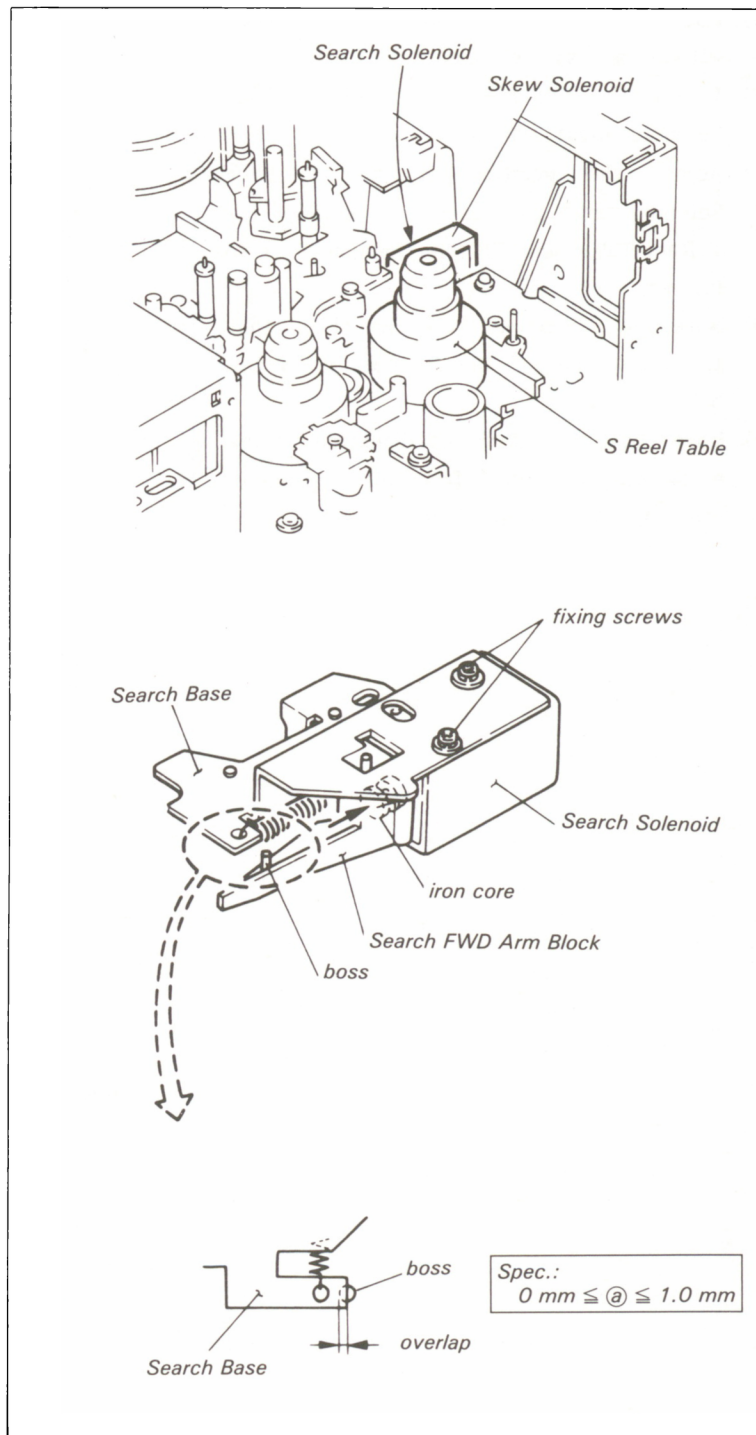
. This adjustment is required only when the search solenoid is replaced or removed.

Preparation:

- (1) Remove the Search Solenoid Block from the chassis.

Adjustment procedure:

- (1) Move the iron core into the fully energized position (as far as it will go in the direction of the arrow). Adjust the position of the Search Solenoid so that the overlap of the Search FWD Arm Boss and the Search Base meets the required specification.



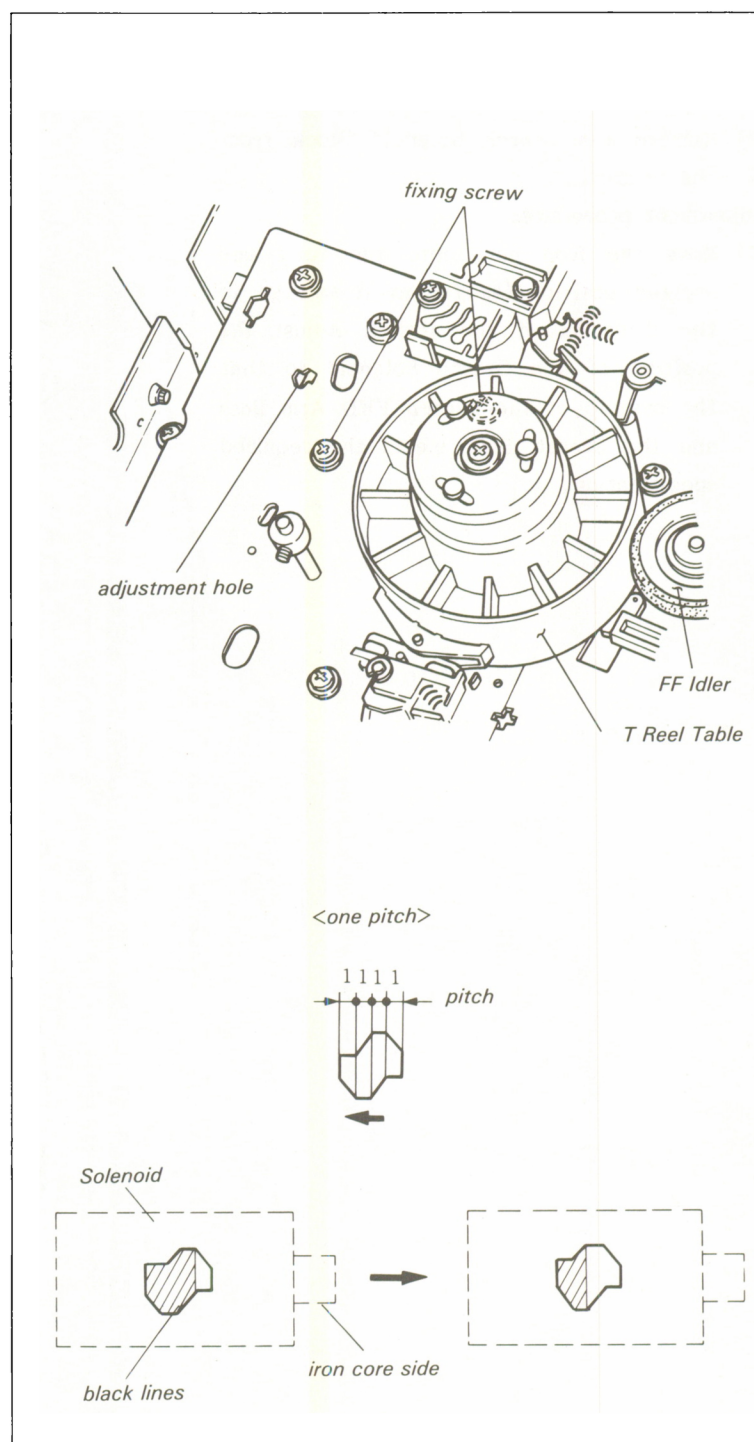
5-7-2. T Idler Solenoid Position Adjustment

. This adjustment is performed when T Idler Solenoid is replaced or removed, and the F FWD Torque does not meet the required specification.

Mode: F FWD mode without a cassette tape

Adjustment procedure:

- (1) Put the unit into the F FWD mode without a cassette tape.
- (2) Loosen the fixing screws of the T Idler Solenoid about 1/2 turn.
- (3) Adjust the position of the T Idler Solenoid until the clearance between the T Reel Table and FF Idler become 0.01 to 0.1 mm.
- (4) Note the adjustment hole and check that the black line of the solenoid is in this hole.
- (5) Move the Solenoid in the direction of the arrow only one pitch from the position of step (4). Tighten the fixing screws.



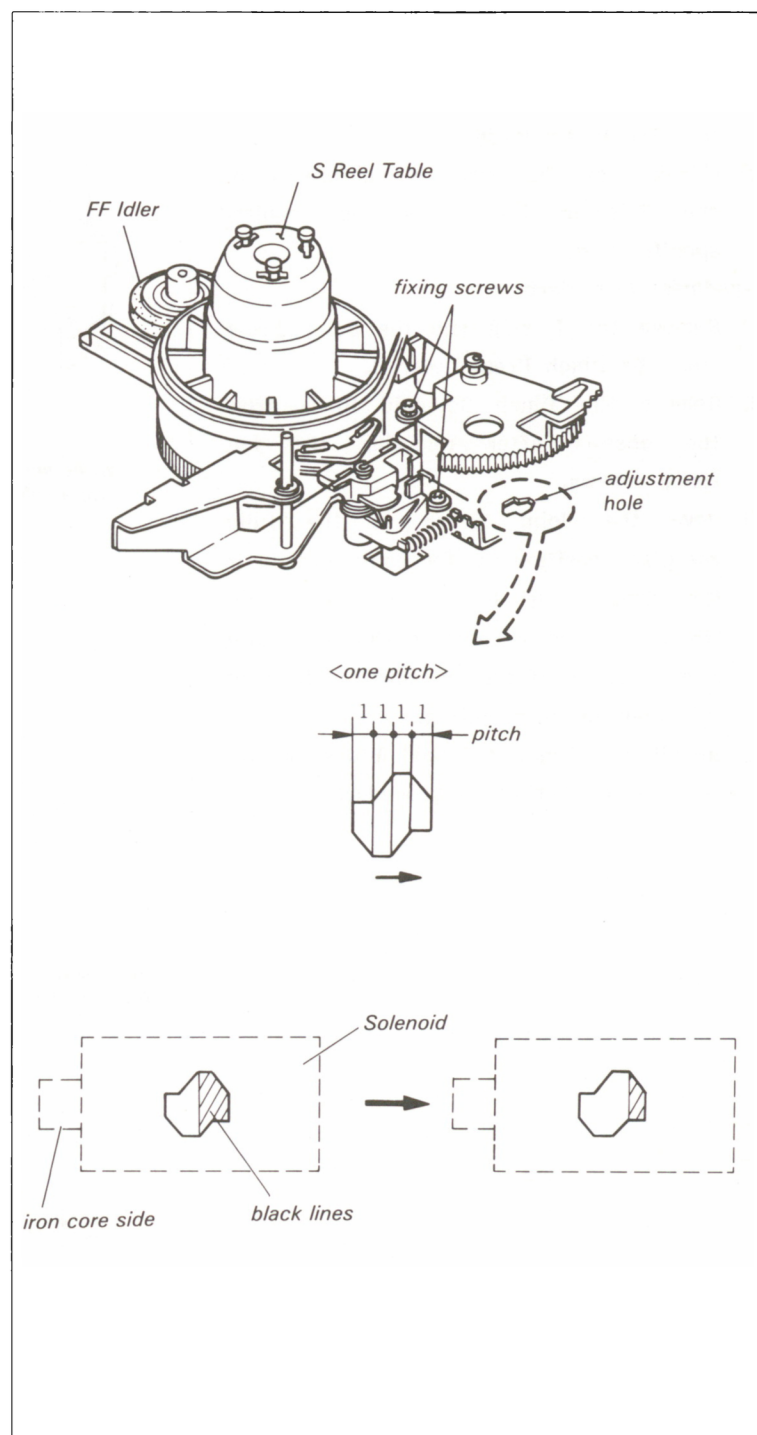
5-7-3. S Idler Solenoid Position Adjustment

. This adjustment is required only when the S Idler Solenoid is replaced or removed, and the REW Torque does not meet the required specification.

Mode: REW mode without a cassette tape

Adjustment procedure:

- (1) Put the unit into the REW mode without a cassette tape.
- (2) Loosen the fixing screws of the S Idler Solenoid about 1/2 turn.
- (3) Adjust the position of the S Idler Solenoid until the clearance between the S Reel Table and FF Idler become 0.01 to 0.1 mm.
- (4) Note the adjustment hole and check that the black line of the solenoid is in this hole.
- (5) Move the Solenoid in the direction of the arrow only one pitch from the position of step (4). Tighten the fixing screws.



5-7-4. Pinch Solenoid Installing Position Adjustment

. This adjustment is required only when the Pinch Solenoid is replaced or removed.

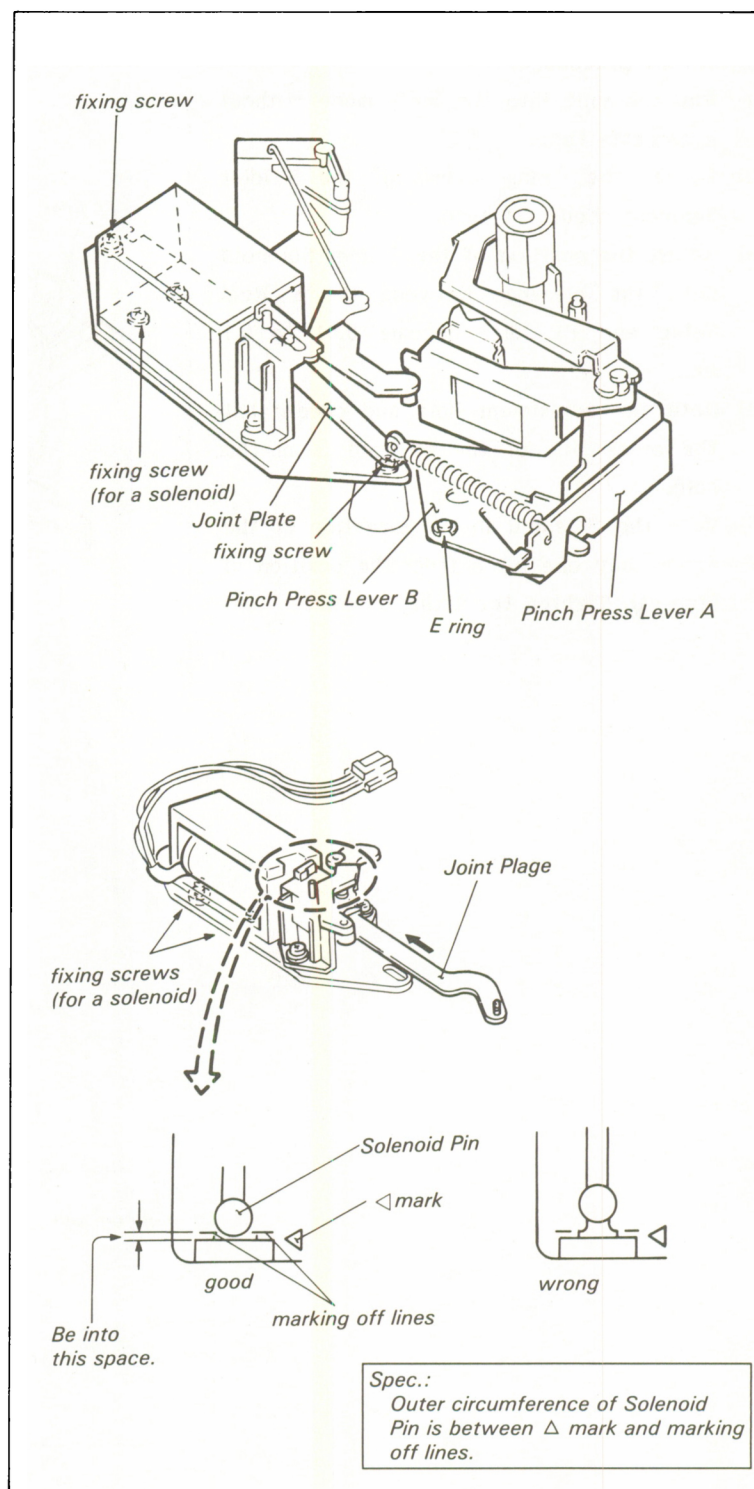
Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a cassette tape and put the unit into the PLAY mode.
- (2) Check that the outer circumference of the Solenoid Pin meets the required specification.

Adjustment procedure:

- (1) Remove the E ring and the Joint Lever from the Pinch Press Lever B.
- (2) Remove the Pinch Solenoid Block from the chassis after removing the two fixing screws.
- (3) Move the Joint Lever to the fully energized position (as far as it will go in the direction of the arrow). Adjust the position of the solenoid so that the outer circumference of the Solenoid Pin to meet the required specification.
- (4) Install the Pinch Solenoid Block on the unit. Perform the check procedure.



5-7-5. T Brake Solenoid Position Adjustment

Tool: Eccentric screwdriver (6 ϕ)

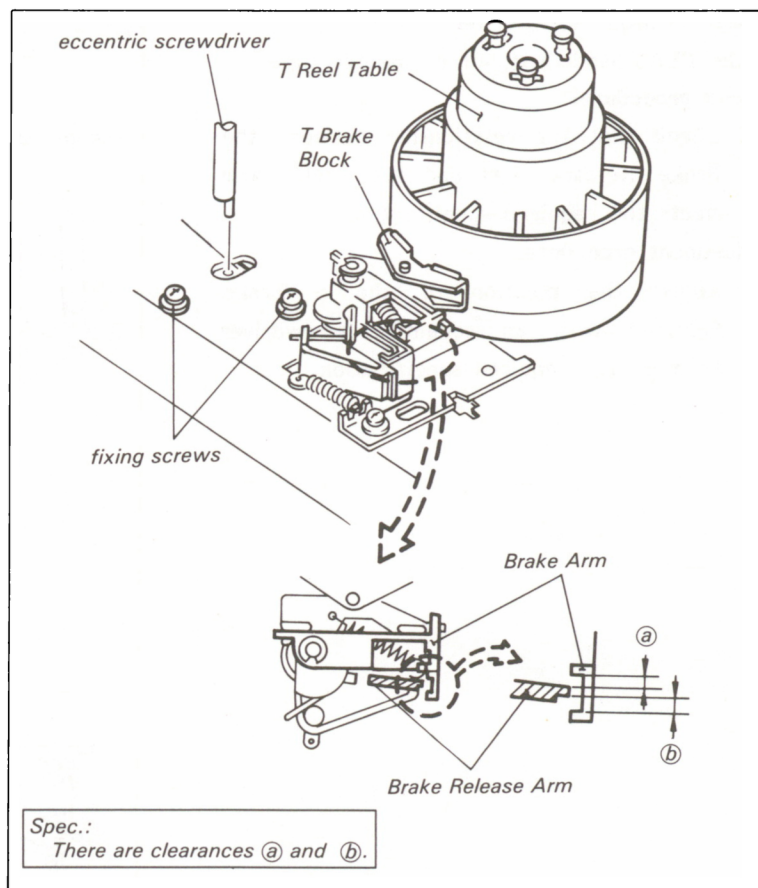
Mode: PLAY mode without a cassette tape

Check procedure:

- (1) Check that the relationship between the Brake Release Arm and the Brake Arm meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the T Brake Solenoid with an eccentric screwdriver to meet the required specification.



5-7-6. S Brake Solenoid Position Adjustment

Tool: Eccentric screwdriver (6 φ)

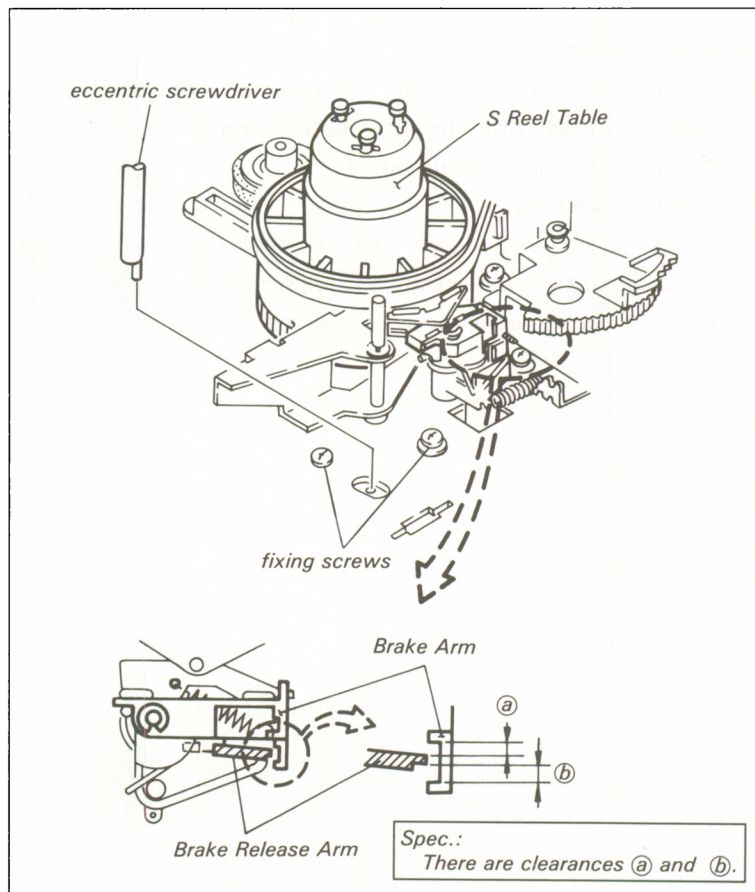
Mode: PLAY mode without a cassette tape

Check procedure:

- (1) Check that the relationship between the Brake Release Arm and the Brake Arm meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the S Brake Solenoid with an eccentric screwdriver to meet the required specification.



5-8. CASSETTE-UP COMPARTMENT ADJUSTMENT

- The Cassette-up Compartment has two photo-electric switches. The ON/OFF timing of these switches is adjusted in this procedures.
- Remove the Cassette-up Compartment from the unit for this adjustment.

5-8-1. Cassette-in Switch Position Adjustment

Tool: Circuit tester

Thickness gauge

Preparation:

- (1) Connect jumpers from the harness plug for the Cassette-up Compartment to terminals on the CC-31 Board as follows:

plug of harness (CN1)	terminal on CC-31 Board
pin 4 (5V) ←	→ pin 4/CN401
pin 5 or 2 (GND) ←	→ pin 5 or 2/CN401

- (2) Turn the power ON.

Check procedure:

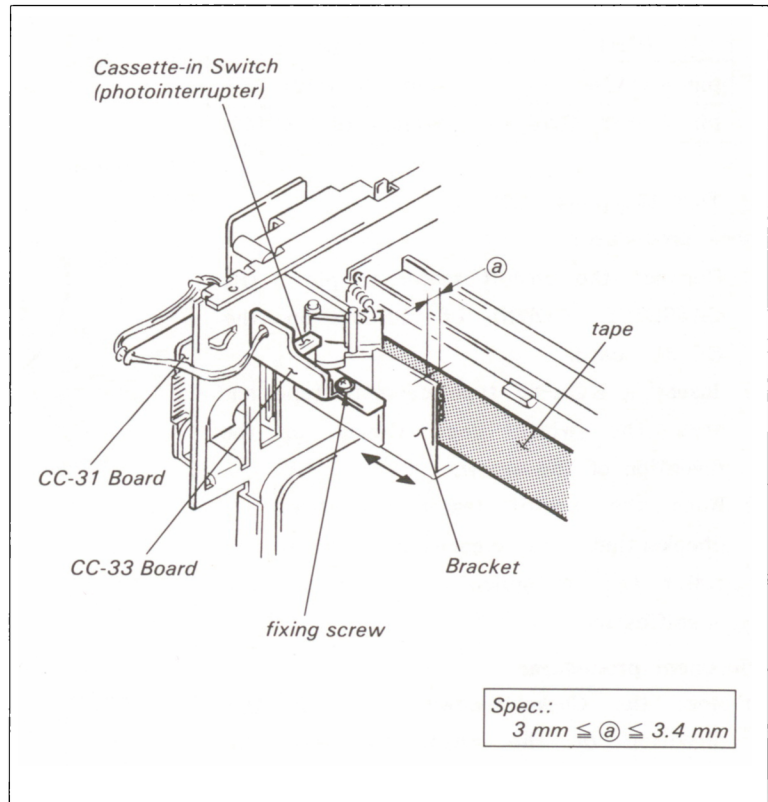
- (1) Connect the circuit tester to pin 1 (H; CASSETTE IN) of CN401 on the CC-31 Board.
- (2) Slowly insert a KCA-60 type cassette tape.
- (3) When the circuit tester indicates "H" (about 5V), check that the clearance between the front side of the cassette tape and the bracket of the Cassette-up Compartment meets the required specification.

Adjustment procedure:

- (1) Move the Cassette-in Switch in the direction of the arrow to meet the required specification.

• Reference:

Insert a 3.3 mm thickness gauge between the cassette tape and the bracket. Adjust the position of the Cassette-in Switch until the circuit tester indicates to "H".



5-8-2. Cassette-down Switch Position Adjustment

Tool: Circuit tester

Preparation:

- (1) Connect jumpers from the harness plug of the Cassette-up Compartment to terminal on the CC-31 Board as follows:

plug of harness (CN1)	terminal on CC-31 Board
pin 4 (5V) ←	→ pin 4/CN401
pin 5 or 2 (GND) ←	→ pin 5 of 2/CN401

- (2) Turn the power ON.

Check procedure:

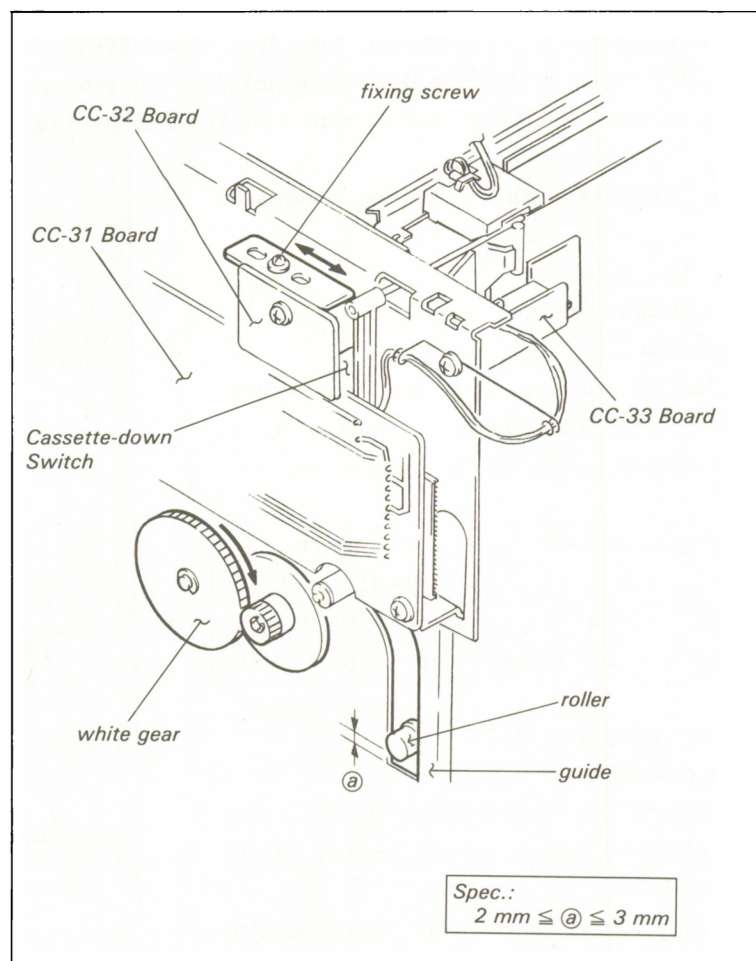
- (1) Connect the circuit tester to pin 3 (H; CASSETTE DOWN) of CN401 on the CC-31 Board.
- (2) Insert a KCA-60 type cassette tape and turn the white gear slowly in the direction of the arrow.
- (3) When the circuit tester indicates "H", check that the clearance between the roller and the guide meets the required specification.

Adjustment procedure:

- (1) Move the Cassette-down switch in the direction of the arrow to meet the required specification.

. Reference:

Turn the white gear on the right side until the clearance between the roller and the guide is 2.2 mm. Adjust the position of the Cassette-down Switch so that the circuit tester indicates "H" in this position.



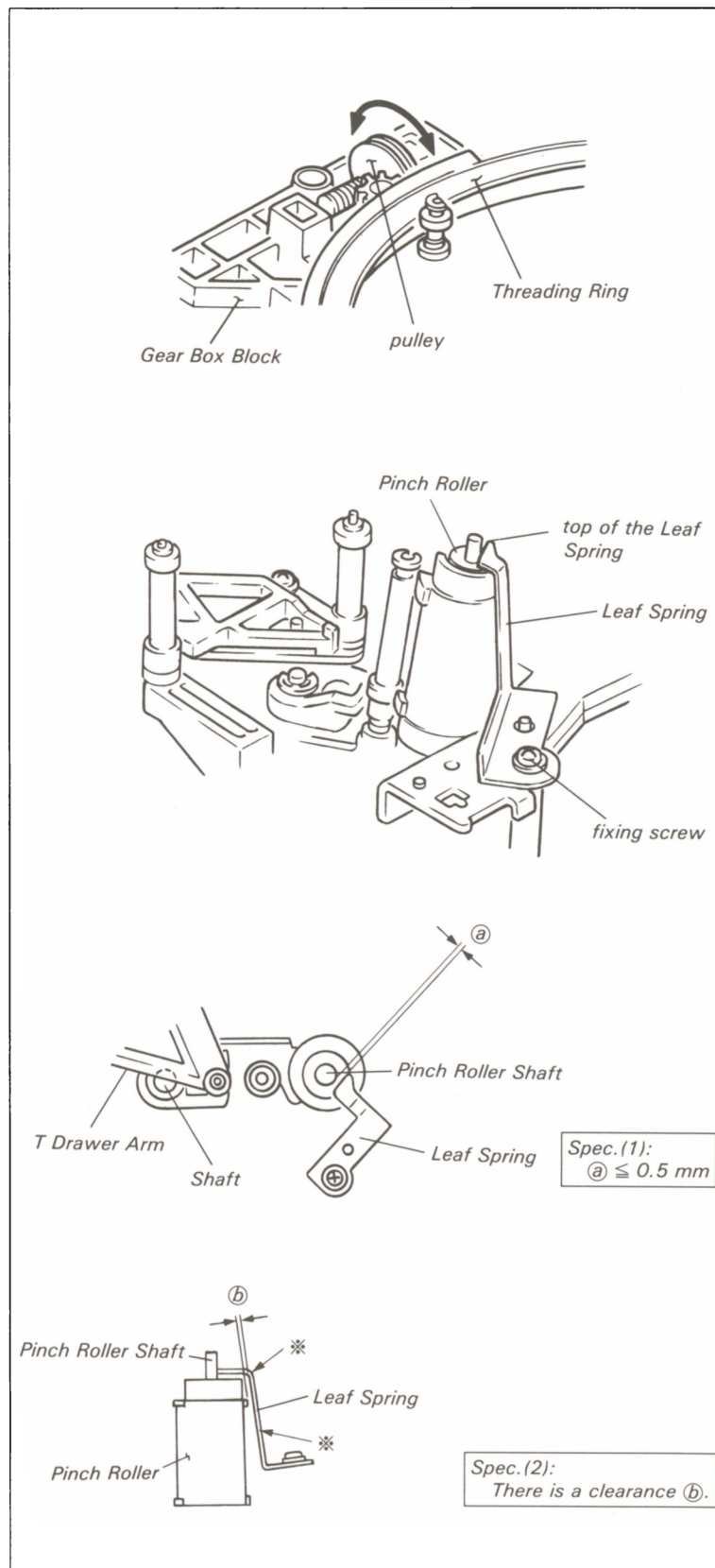
5-9. LEAF SPRING POSITION ADJUSTMENT

Check procedure:

- (1) Put the unit into the PLAY mode without a cassette tape and then put the unit into the EJECT mode.
- (2) Turn the Gear Box Pulley by hand so that the edge of the T Drawer Arm is at the center of the shaft as shown in the figure.
- (3) Check that the clearance between the Leaf Spring and the Pinch Roller Shaft meets the required specification (1).
- (4) Put the unit into the PLAY mode without a cassette tape and then put the unit into the EJECT completion mode.
- (5) Check that the Leaf Spring touches the Pinch Roller Shaft, and the clearance between the Leaf Spring and the Pinch Roller meets the required specification (2).

Adjustment procedure:

- (1) Adjust the position of the Leaf Spring to meet the required specifications (1) and (2). If only specification (2) cannot be obtained, bend the ※ of the Leaf Spring to meet the required specification.



SECTION 6

BACK TENSION AND TORQUE ALIGNMENT

6-1. BRAKE SYSTEM ADJUSTMENT

6-1-1. S Brake Torque Adjustment

Tool: Reel table torque measurement tape
(100 mm dia.)

Tension scale (200 g full scale)

Mode: EJECT completion / power OFF mode

Check procedure:

- (1) Grasp the top of the S Reel Table. While turning it in the clockwise direction approx. 30 degrees, check that the clearance between the Brake Arm and the Lining Holder meets the required specification (1).
- (2) Place the jig tape on the S Reel Table and hook a tension scale to the end of the jig tape. Pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

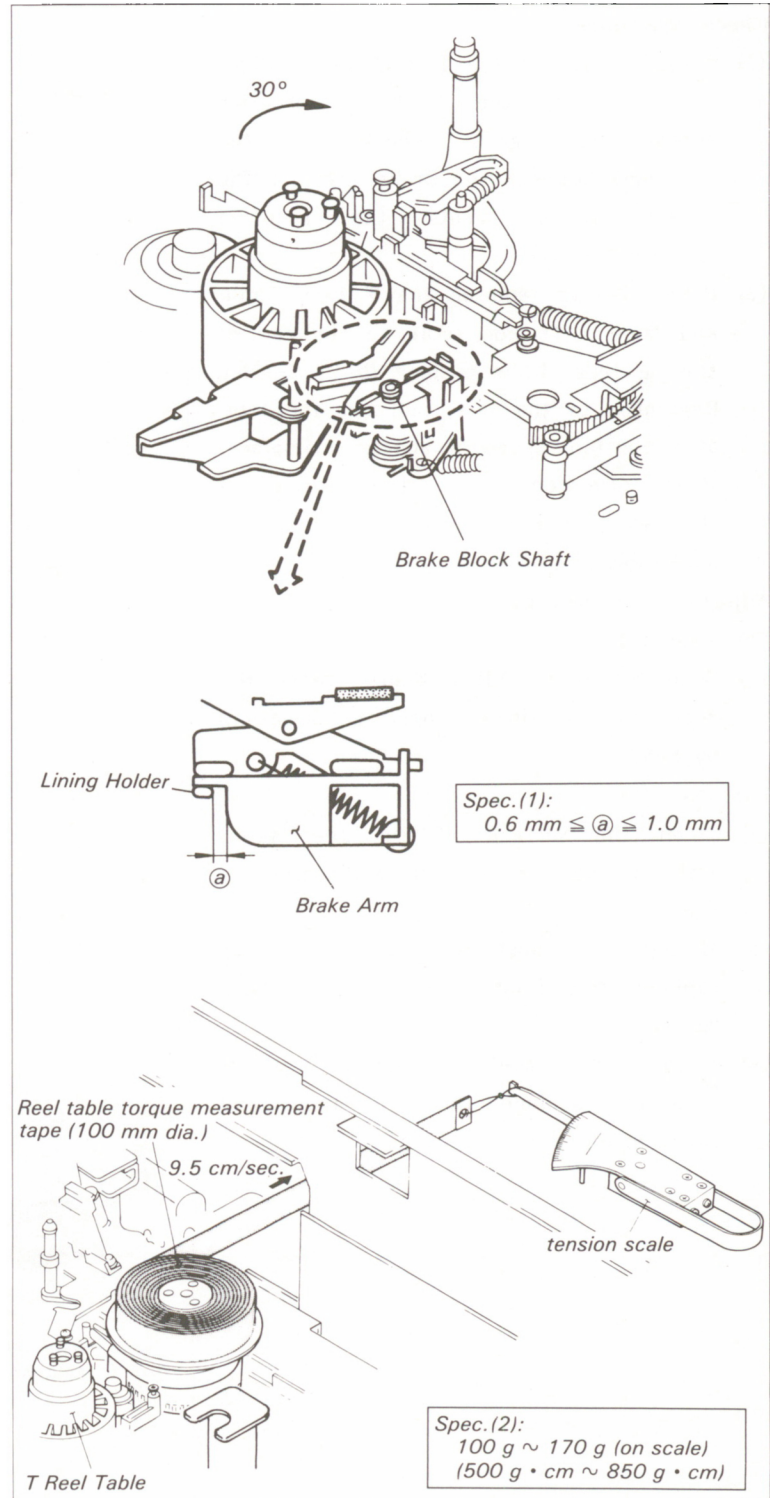
Adjustment procedure:

For Spec. (1)

- (1) Bend the Brake Block Shaft toward the reel table (or in the opposite direction) by hand.

For Spec. (2)

- (2) Clean the surface of the reel table with a cloth moistened with cleaning fluid.
- (3) If does not meet the specification (2), replace the Lining Holder and check again.
- (4) If does not meet the specification in Step (3), replace the reel table and check again.



6-1-2. T Brake Torque Adjustment

Tool: Reel table torque measurement tape
(100 mm dia.)

Tension scale (200 g full scale)

Mode: EJECT completion / power OFF mode

Check procedure:

- (1) Grasp the top of the T Reel Table. While turning it in the clockwise direction approx. 30 degrees, check that the clearance between the Brake Arm and the Lining Holder meets the required specification (1).
- (2) Place the jig tape on the T Reel Table and hook a tension scale to the end of the jig tape. While pushing the T Tension Regulator to the left, pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

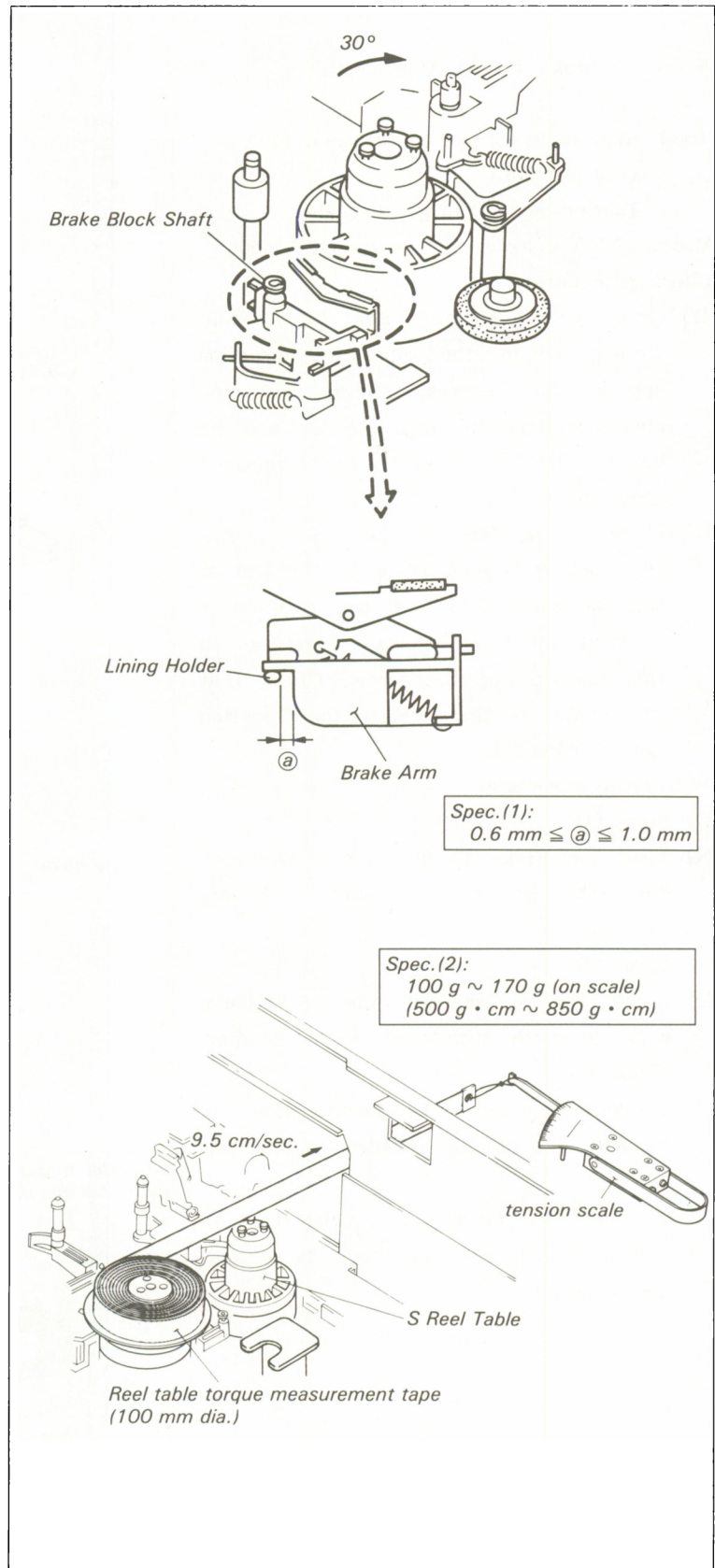
Adjustment procedure:

For Spec. (1)

- (1) Bend the Brake Block Shaft toward the reel table (or in the opposite direction) by hand.

For Spec. (2)

- (2) Clean the surface of the reel table with a cloth moistened with cleaning fluid.
- (3) If does not meet the specification (2), replace the Lining Holder and check again.
- (4) If does not meet the specification in Step (3), replace the reel table and check again.



6-1-3. REW Brake Torque Adjustment

Mode: REW mode

Tool: Reel table torque measurement tape
(100 mm dia.)

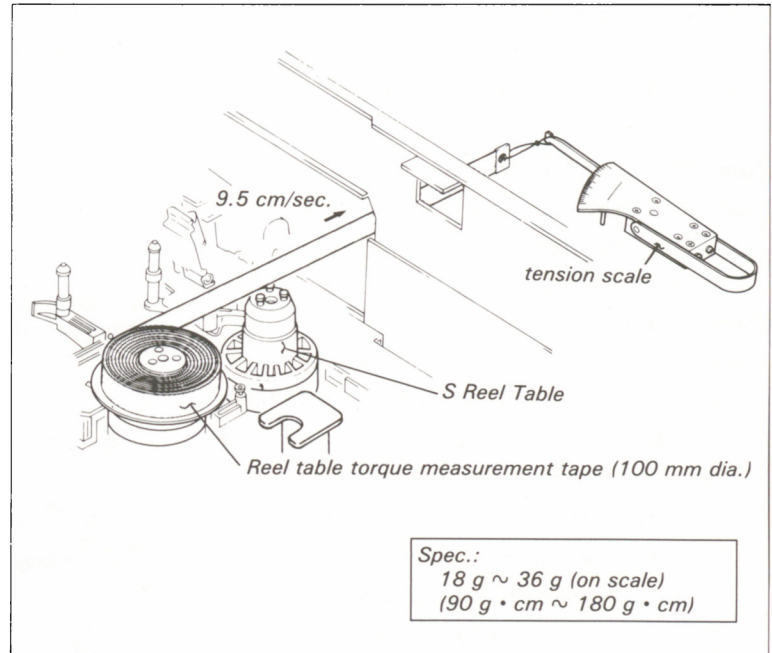
Tension scale (50 g full scale)

Check procedure:

- (1) Place the jig tape on the T Reel Table and hook a tension scale to the end of the jig tape.
- (2) Put the unit into the REW mode. Pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) If does not meet the specification, replace the R Brake Ass'y and check again.
- (2) If does not meet the specification in Step (1), replace the Reel Table and check again.



6-2. F FWD / REW TORQUE ADJUSTMENT

. It is required that the Section 5-7-2, T Idler Solenoid Position Adjustment and Section 5-7-3, S Idler Solenoid Position Adjustment are correct before initiating this adjustment.

Mode: F FWD and REW modes

Tool: Reel table torque measurement tape
(100 mm dia.)
Tension scale (500 g full scale)

Check procedure:

F FWD Torque

- (1) Place the jig tape on the T Reel Table and hook a tension scale to the end of the tape. Pull out the tape.
- (2) Put the unit into the F FWD mode. Let the tape be pulled at a constant speed of approx. 9.5cm/sec. Check that the scale reading meets the required specification.

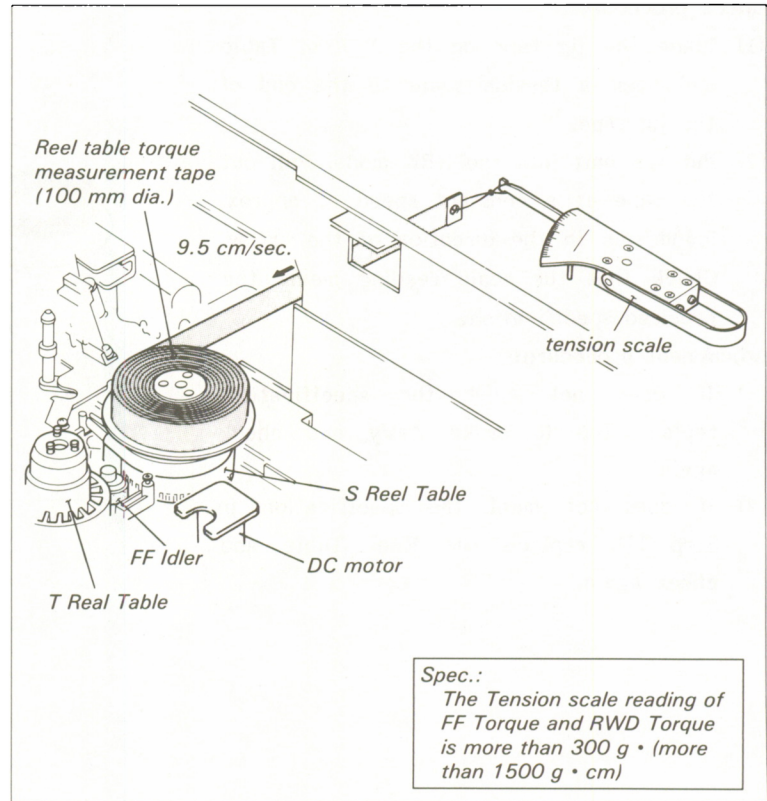
REW Torque

- (3) Install the jig tape on the S Reel Table and hook a tension scale to the end of the tape. Pull out the tape.
- (4) Put the unit into the REW mode. Let the tape be pulled at the constant speed of approx. 9.5cm/sec. Check that the scale reading meets the required specification.

Adjustment procedure:

Both F FWD Torque and REW Torque are adjusted by the following adjustment procedures.

- (1) Clean the surface of the Reel Table, FF idler and belt with a cloth moistened with cleaning fluid. Check the torque again.



- (2) If Step (1) does not meet the specification, put the unit into F FWD or REW mode without a cassette tape. Check that the dc voltage at the terminals of the dc motor is $10.5 \pm 1.5V$. If the dc voltage is out of specification, check that the circuit operation of the SY Board operates correctly.
- (3) If does not meet the specification in Steps (1) and (2), replace the Reel Table, FF idler and belt.

6-3. FWD TORQUE ADJUSTMENT

Tool: Special shorting clip
(Refer to the figure.)

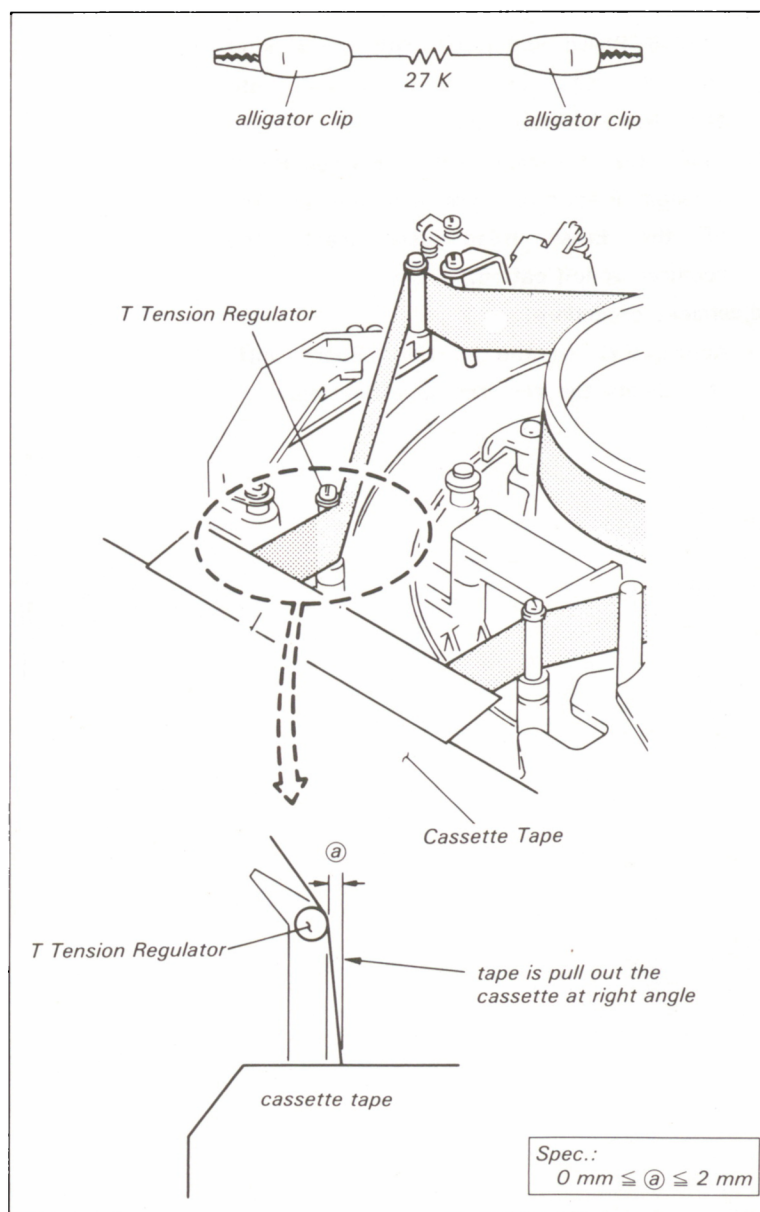
Mode: 1/2 FWD SEARCH mode

Check procedure:

- (1) Insert a KCS-20 cassette tape wound to the tape end portion.
- (2) Put the unit into the FWD SEARCH X 5 mode.
- (3) Short between TP3 on the SY-106B Board and GND with a shorting clip.
- (4) Short between TP11 on the SV-93B Board and GND with a shorting clip.
- (5) Short between pin 5 of IC 20 on the SV-93B Board and GND with the special shorting clip. (The unit is put into the FWD SEARCH mode.
- (6) Check that the relationship between the T Tension Regulator Arm and cassette tape meets the required specification.

Adjustment procedure:

- (1) Adjust RV3 on the SY-106B Board until it meets the required specification in the FWD mode.



6-4. REV TORQUE ADJUSTMENT

Tool: Special shorting clip

(Refer to Section 6-3.)

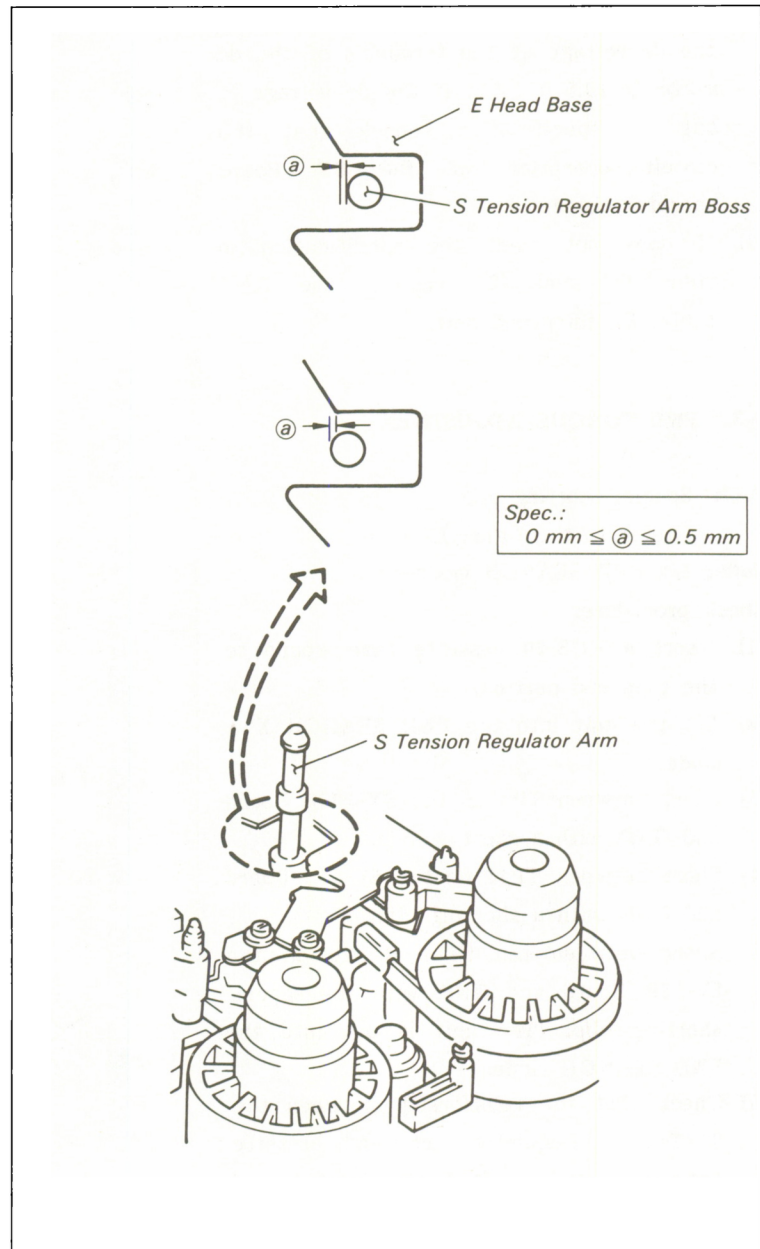
Mode: 1/2 REV SEARCH mode

Check procedure:

- (1) Insert a KCA-60 cassette tape wound to the tape beginning portion.
- (2) Put the unit into the FWD SEARCH X 5 mode.
- (3) Short between TP3 on the SY-106B Board and GND with a shorting clip.
- (4) Short between TP11 on the SV-93B Board and GND with a shorting clip.
- (5) Short between pin 5 of IC 20 on the SV-93B Board and GND with the special shorting clip. (The unit is put into the FWD SEARCH mode.)
- (6) Check that the relationship between the S Tension Regulator Boss and the bracket of the Erase Head Base meets the required specification.

Adjustment procedure:

- (1) Adjust RV2 on the SY-106B Board until it meets the required specification.



6-5. F FWD BACK TENSION ADJUSTMENT

- . It is required that the Section 5-6-3, S Tension Regulator Operating Position Adjustment is correct before initiating this adjustment.
- . It is required that the Section 6-6, FWD Back Tension Adjustment is performed after this adjustment.

Tool: Back tension adjustment jig
Reel table torque measurement tape
(100 mm dia.)
Tension scale (50 g full scale)

Preparation:

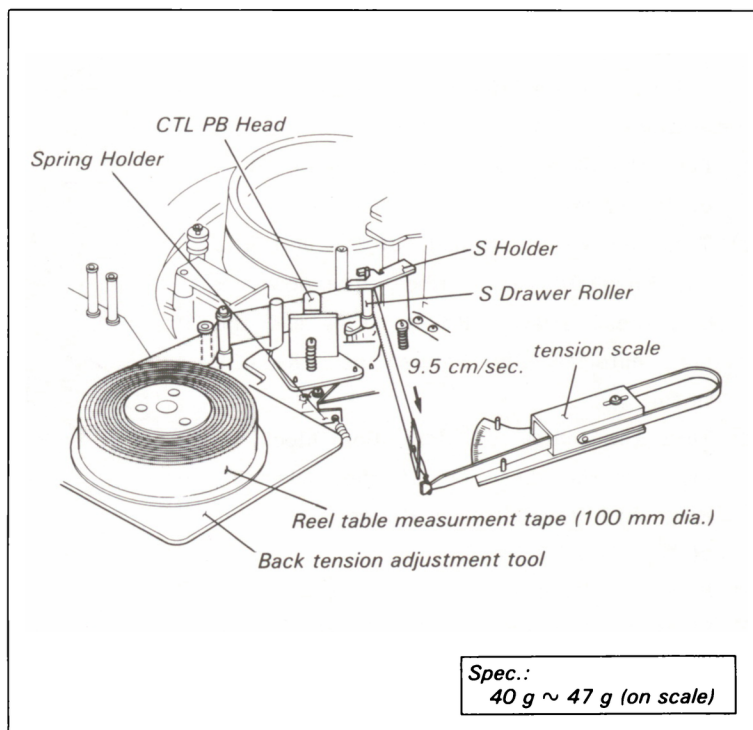
- (1) Turn the power ON and put the unit into the FR-STOP mode. (When the power is ON, the S Drawer Arm moves and the unit automatically enters the FR-STOP mode.)
- (2) Turn the Pulley of Gear Box Block by hand in the direction of the Threading Ring until the S Drawer Roller is in front of the CTL PB Head.
- (3) Place the Back Tension Adjustment Jig.
- (4) Place the jig tape on the S Reel Table and pull out the tape as shown in the figure. Check that the tape does not curl at the flange of the S Drawer Roller.
- (5) Turn the Pulley in the opposite direction in Step (2) until the S Drawer Roller is engaged with the S Holder.
- (6) Hook a tension scale to the end of the tape.

Check procedure:

- (1) Press the F FWD button and put the unit into the F FWD mode.
- (2) Pull out a tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) Move the position of the Spring Holder with a flatblade screwdrivers (3mm dia.) to meet the required specification.
- (2) After the adjustment, perform the check procedures again.
- (3) Perform the Section 6-6, FWD Back Tension Adjustment.



6-6. FWD BACK TENSION ADJUSTMENT

- . It is required that the Section 5-6-3, S Tension Regulator Operating Position Adjustment and the Section 6-5, F FWD Back Tension Adjustment are correct before initiating this adjustment.

Tool: Back tension adjustment jig
Reel table torque measurement tape
(100 mm dia.)
Tension scale (100 g full scale)

Preparation:

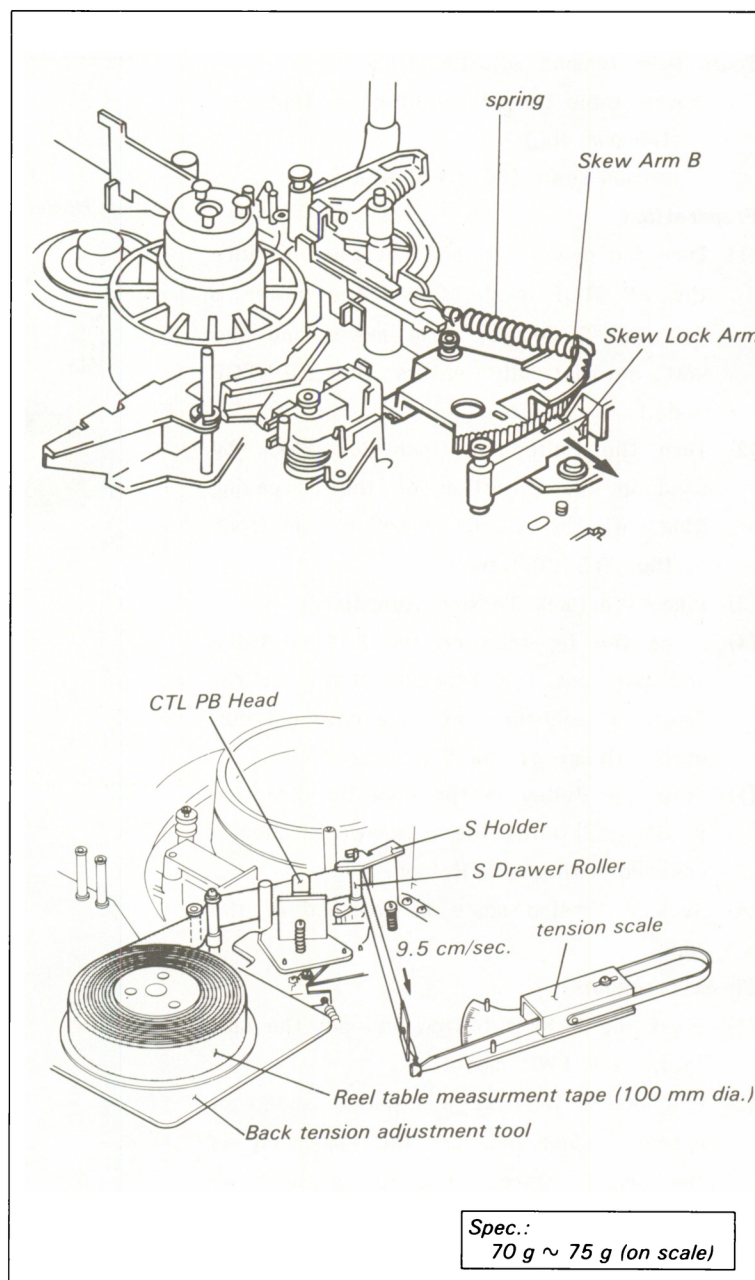
- (1) Push the Skew Lock Arm in the direction of the arrow.
- (2) Turn the power ON and put the unit into the FR-STOP mode. (When the power is ON, the S Drawer Roller moves and the unit automatically enters the FR-STOP mode.)
- (3) Turn the pulley of Gear Box Block by hand in the direction of the Threading Ring until the S Drawer Roller is in front of the CTL PB Head.
- (4) Place the Back Tension Adjustment Jig.
- (5) Place the jig tape on the S Reel Table and pull out the tape as shown in the figure. Check that the tape does not curl at the flange of the S Drawer Roller.
- (6) Turn the Pulley of the Gear Box in opposite direction in Step (3) until the S Drawer Roller is engaged with the S Holder.
- (7) Hook a tension scale to the end of tape.

Check procedure:

- (1) Press the PLAY button and put the unit into the PLAY mode.
- (2) Pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the proper spring hook of the Skew Arm B to meet the required specification.
- (2) After adjustment, perform the check procedures again.



SECTION 7

TAPE RUN ALIGNMENT

7-1. F FWD/REW MODES TAPE PATH ADJUSTMENT

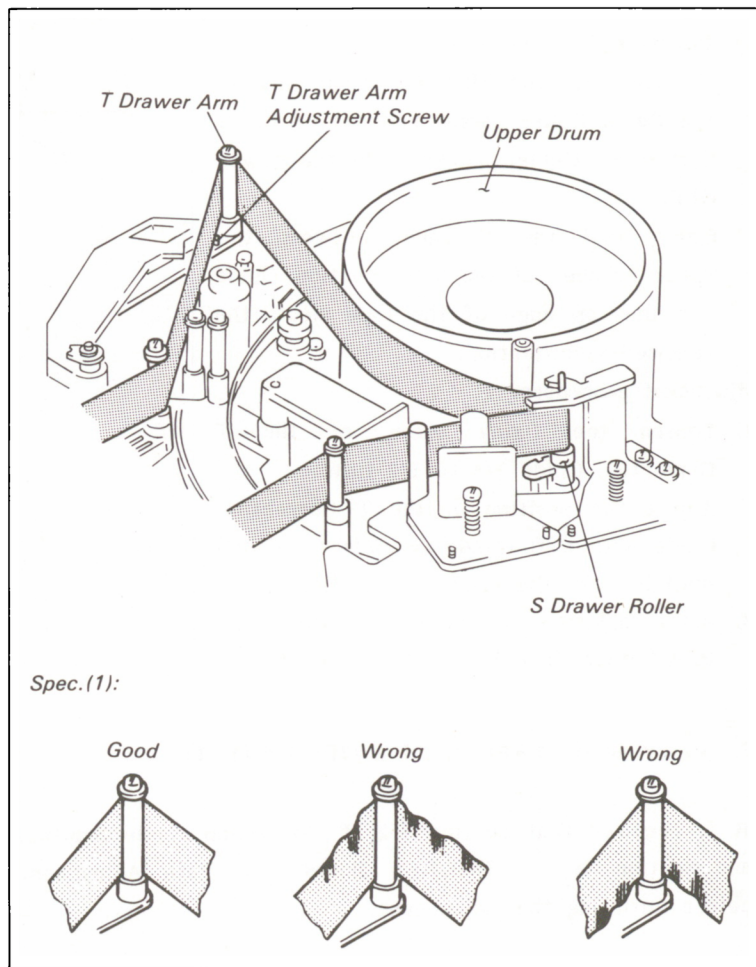
Mode: F FWD and REW modes

Check procedure:

- (1) Insert a KCA-60 cassette tape which has advanced about half way through (about 30 minutes). Put the unit into the REW mode.
- (2) Check that the tape tension is equal around the T Drawer Arm. (Spec.1)
- (3) Check that the tape runs without any curling at the upper or lower flange of the S Drawer Roller in the REW mode. (Spec. 2)
- (4) Put the unit into the STOP mode, and then into the REW mode. Check that the tape runs without any curling at the S Drawer Roller at the moment just after entering the REW mode. (Spec. 3)
- (5) Put the unit into the F FWD mode. Check that the tape runs without any curling at the S Drawer Roller and T Drawer Arm at the moment of just after entering the F FWD mode. (Spec. 4)

Adjustment procedure:

- (1) Adjust the slantness of the T Drawer Arm by turning the T Drawer Arm Adjustment Screw.



7-2. T CORRECTION GUIDE SLANTNESS ADJUSTMENT

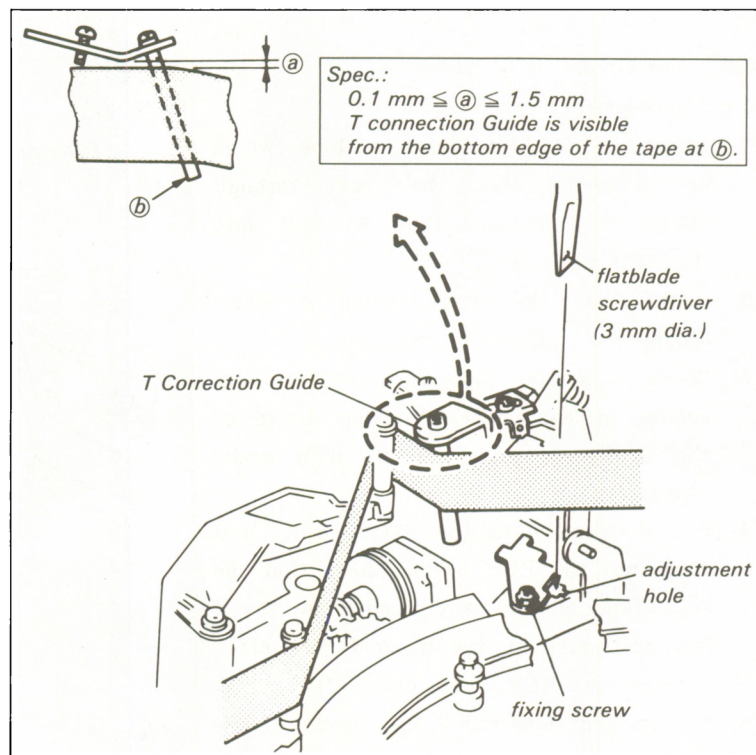
Tool: Dental mirror

Check procedure:

- (1) Insert a KCA-60 cassette tape and put the unit into the FR-STOP mode. Just as the Pinch Roller passes in front of the T Correction Guide, quickly turn the power OFF.
- (2) Check that the clearance between the upper bracket of the T Correction Guide and the top edge of the tape meets the required specification.

Adjustment procedure:

- (1) Loosen the fixing screw of the T Correction Guide 1/4 to 1/2 turn.
- (2) Adjust the position of the T Correction Guide with a flatblade screwdriver (3 mm dia.) to meet the required specification.
- (3) After adjustment, perform Section 7-3, PLAY Mode Tape Path Adjustment (1).



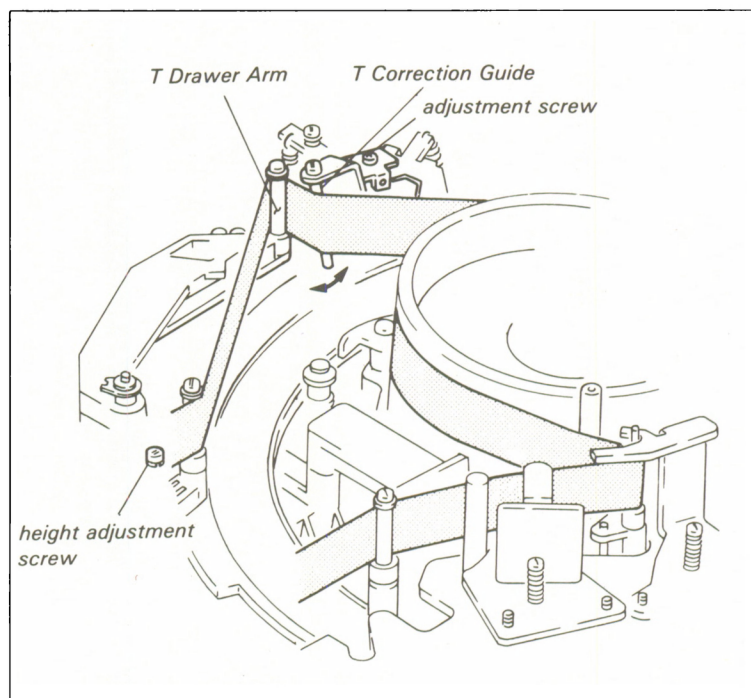
7-3. PLAY MODE TAPE PATH ADJUSTMENT (1)

- It is required that Section 7-2, T Correction Guide Slantness Adjustment and Section 7-1, F FWD/REW Modes Tape Path Adjustment are correct before initiating this adjustment.

Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a KCA-60 cassette tape which has been advanced about half way through (30 minutes). Put the unit into the PLAY mode.
- (2) Check that the tape runs without any curling at the upper or lower flange of the T Drawer Guide. (Spec.1)
- (3) Check that tape tension is equal at the top and bottom edges of the tape around the T Drawer Guide, and that the tape runs without any curling at the lower flange of the T Drawer Guide. (Spec.2)



Adjustment procedure:

For Spec.1

- (1) Adjust the height of the T Drawer Arm by turning the T Drawer Arm Height Adjustment Screw.

For Spec.2

- (2) Bend the T Correction Guide in the direction of the arrow. Turn the adjustment screw if necessary to meet the required specification.

7-4. PLAY MODE TAPE PATH ADJUSTMENT (2)

Tool: Dental mirror

Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a KCA-60 cassette tape which has been advanced about half way through (30 minutes). Put the unit into the PLAY mode.
- (2) At the * marks (two positions) in the figure, check that tape tension is equal at the top and bottom edges of the tape. (Spec.1)
- (3) Check that the clearance between the lower flange of the Threading Roller and the bottom edge of the tape meets the required specification (2).

Adjustment procedure:

- (1) Loosen the fixing screw at the bottom of the Threading Roller.

For Spec.1

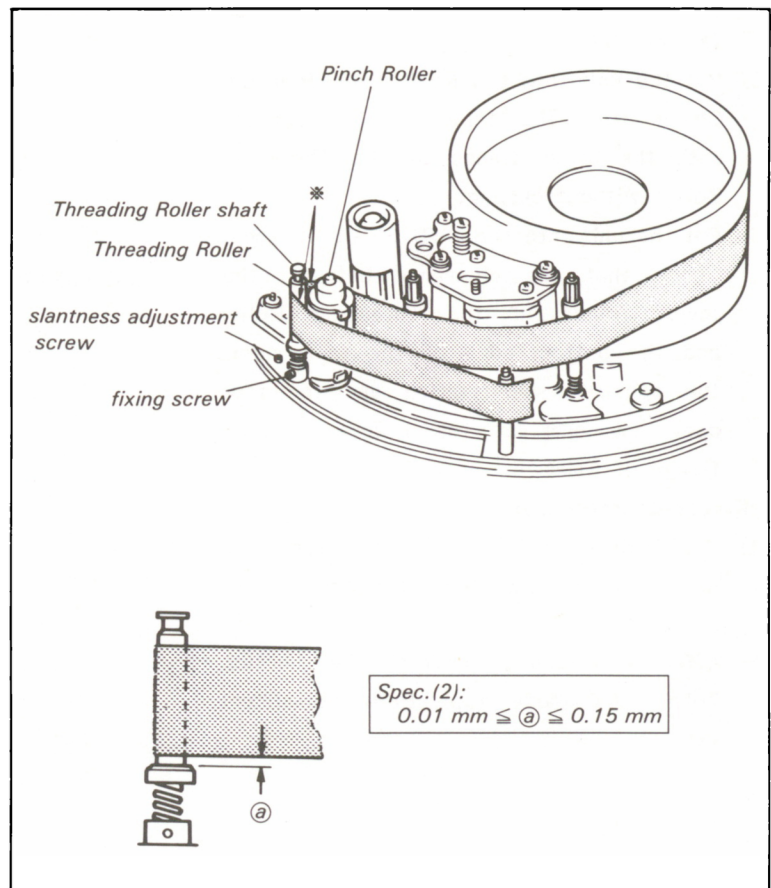
- (2) Adjust the slantness of the Threading Roller by turning the slantness adjustment screw.

NOTE:

- . After adjustment, perform Section 7-5, REV Mode Tape Path Adjustment and Section 7-6, Tape Path Adjustment Around The Pinch Roller.

For Spec.2

- (3) Adjust the height of the Threading Roller by turning the Threading Roller Shaft to meet the required specification.



- (4) Check that the slantness and the height meet the required specifications (1) and (2).
- (5) After adjustment, tighten the fixing screw of the Threading Roller and perform the check procedure.

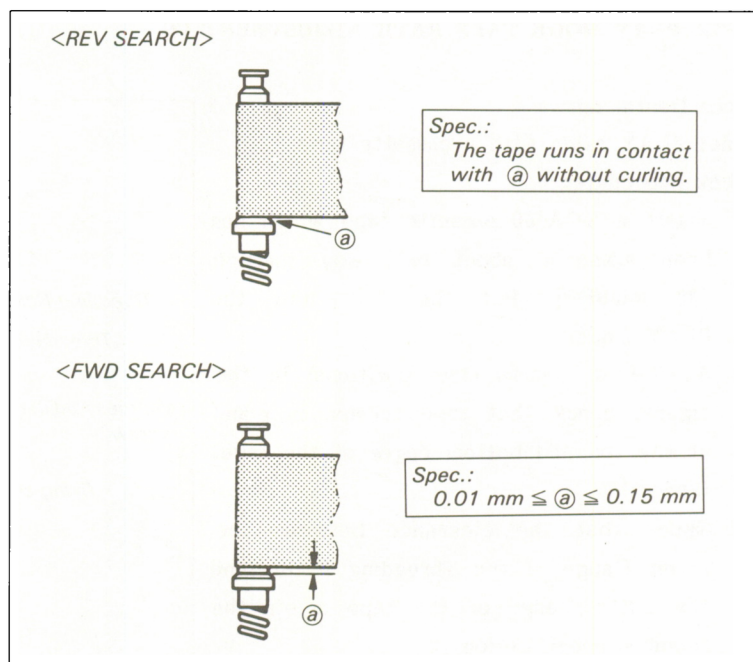
7-5. REV MODE TAPE PATH ADJUSTMENT

Check procedure:

- (1) Insert a KCA-60 cassette tape which has been advanced about half way through (30 minutes).
- (2) Put the unit into the REV SEARCH mode. Check that the tape runs in contact with the lower flange of the Threading Roller without curling.
- (3) Put the unit into the FWD SEARCH mode. Check that the clearance between the lower flange of the Threading Roller and the bottom edge of the tape meets the required specification and the tape does not curl at the lower or upper flange of TG-4.

Adjustment procedure:

- (1) Fine adjust the height of the Threading Roller by turning the Threading Roller Shaft.
- (2) After adjustment, perform the Section 7-4, PLAY Mode Tape Path Adjustment (2).



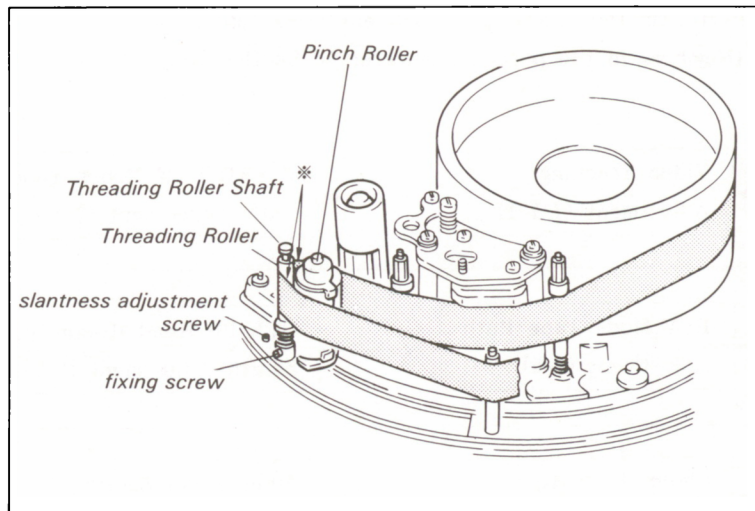
7-6. TAPE PATH ADJUSTMENT AROUND PINCH ROLLER

Check procedure:

- (1) Insert a KCA-60 cassette tape wound to the tape beginning portion.
- (2) When put the unit into the PLAY, REV SEARCH, FWD SEARCH modes, check that tape wrinkle does not appear, or disappear within 2 sec.

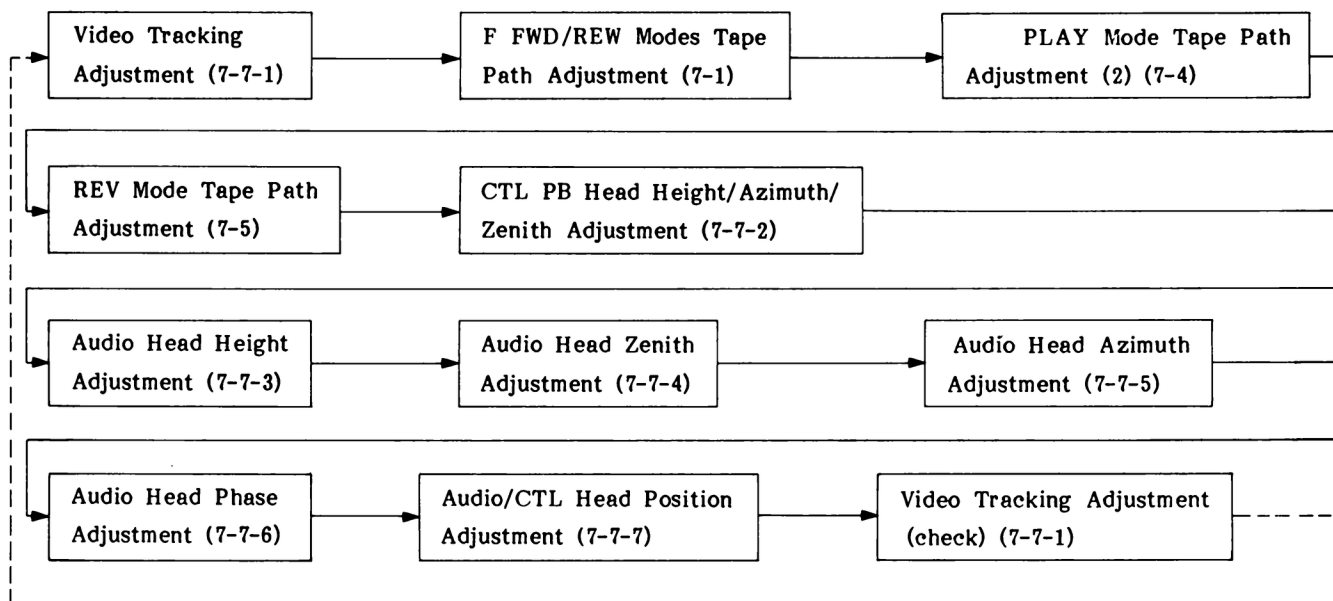
Adjustment procedure:

- (1) Adjust the slantness and height of the Threading Roller until it meets the required specification.
- (2) After adjustment, perform Section 7-4, PLAY Mode Tape Path Adjustment (2), Section 7-5, REV Mode Tape Path Adjustment, and Section 7-7, Tracking Adjustment.



7-7. TRACKING ADJUSTMENT

- . Perform the Tracking Adjustment is as follow:
(Numbers in the parenthesis refer to Section Nos.)



7-7-1. Video Tracking Adjustment

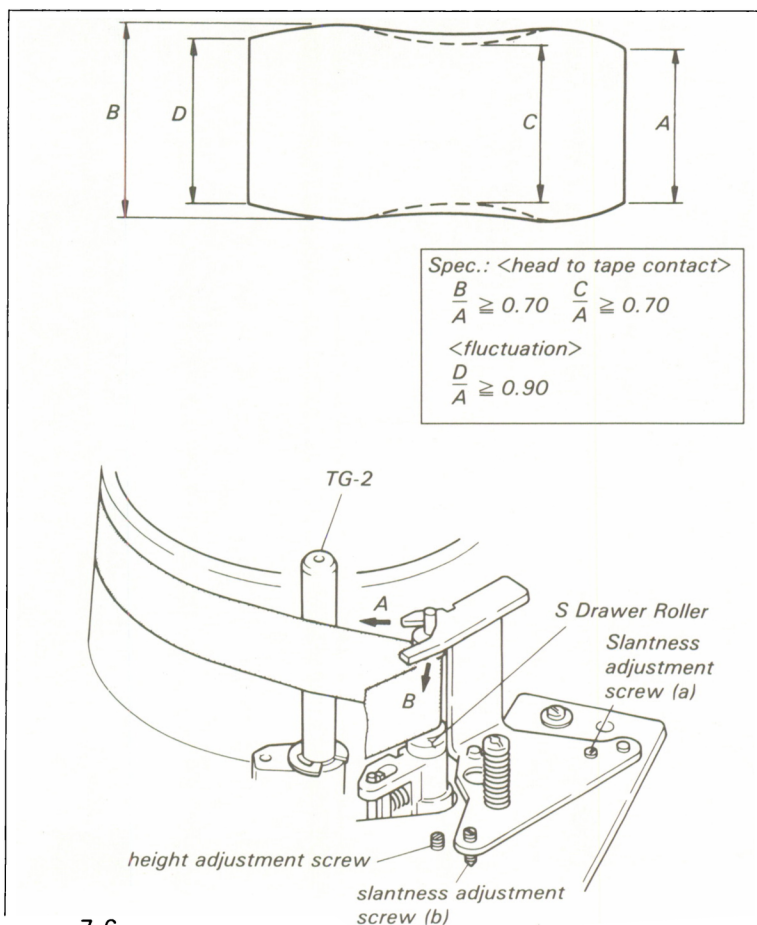
Tool: Alignment tape, RR5-3SA
Flatness Plate
Oscilloscope
Dental mirror

Preparation:

- (1) Connect the oscilloscope to TP1 on the VA-57 Board and EXT.TRIG to TP2 on the VA-57 Board.
- (2) Playback the color-bar signal portion of the alignment tape.

Check procedure:

- (1) While turning the TRACKING control knob, check that the RF waveform maintains a flat envelope while the amplitude increases and decreases.
- (2) Check that fluctuation and head-to-tape contact of the RF envelope are within the specification at the center detent position of the TRACKING control knob.



Adjustment procedure:

- The S Drawer Roller Block has three adjustment screws. These three adjustment screws function as follows:

(i) Slantness adjustment screw (a)

Turn this screw in the clockwise direction, and the S Drawer Roller slants in the direction of arrow A.

(ii) Slantness adjustment screw (b)

Turn this screw in the counterclockwise direction, and the S Drawer Roller slants in the direction of arrow B. This screw is used for removing tape curl at the upper flange of the S Drawer Roller. However, this screw is used only when the tape curls at the flange of the S Drawer Roller, even though the RF output waveform meets the required specification.

(iii) Height adjustment screw

Turn this screw in the clockwise direction, and the height of the S Drawer Roller lowers.

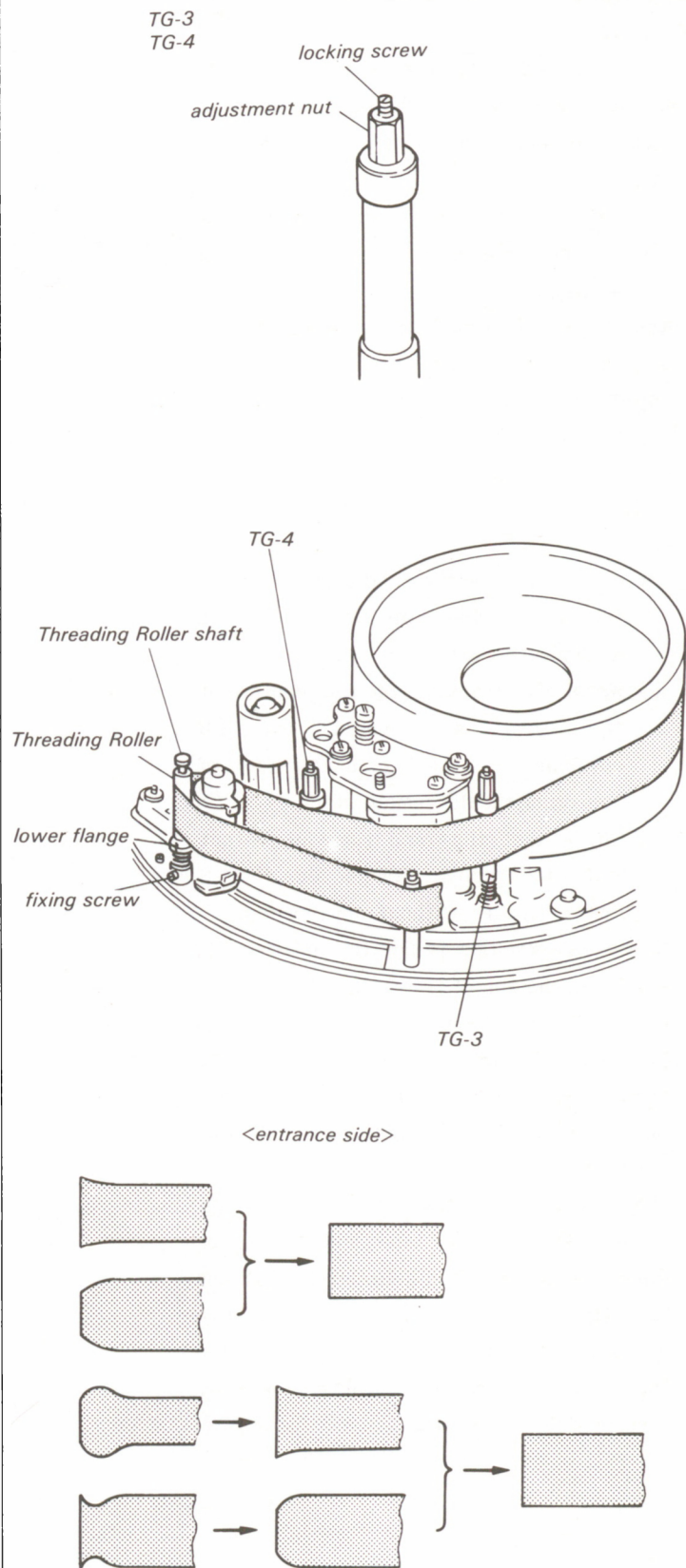
- When tape guides (TG-3, TG-4) are adjusted, loosen the locking screw about 1 turn and adjust the height by turning the height adjustment nut.

- When tracking at the entrance side of the drum is not good.

- (1) Turn the TRACKING control knob until the RF envelope amplitude is 70 to 80 % of maximum.
- (2) Adjust the height and the slantness of the S Drawer Roller by turning the height adjustment screw and the slantness adjustment screw (a) until the RF envelope of the entrance side is flat.

NOTE:

- (i) Check the surface of the running tape very carefully around the S Drawer Roller. Check that tape tension is equal at the top and bottom of the tape.
- (ii) Check that the tape runs in contact with the upper flange of the S Drawer Roller without any curling.



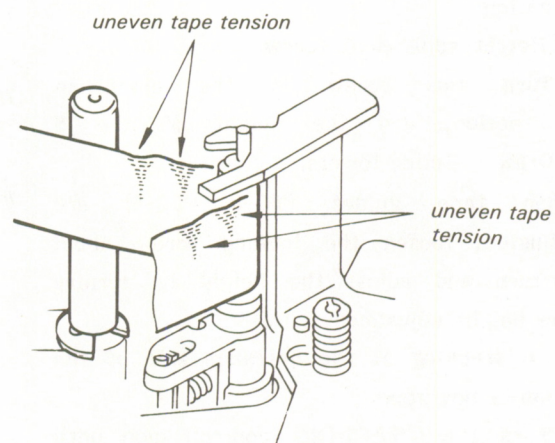
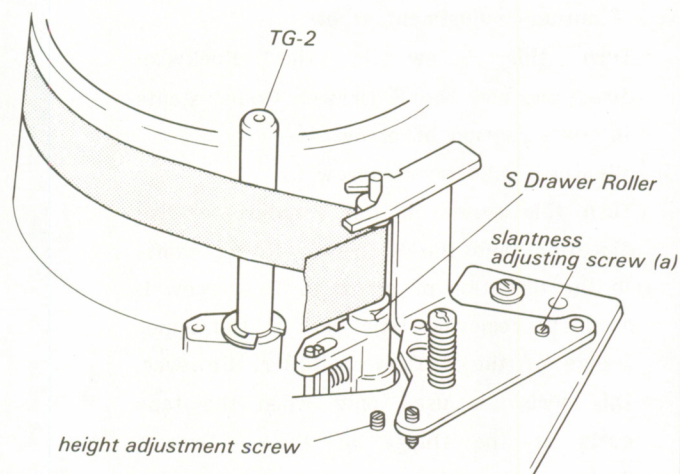
. When tracking at the center of the drum is not good.

(It is required that the Tracking adjustment at the entrance side of the drum is correct before initiating this adjustment.)

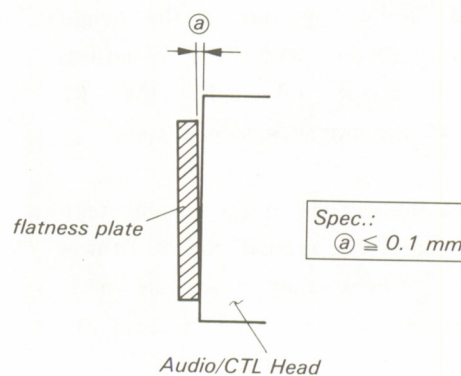
- (3) Turn the TRACKING control knob until the RF envelope amplitude is 70 to 80% of maximum.
- (4) Adjust the height and the slantness of the S Drawer Roller by turning the height adjustment screw and the slantness adjustment screw (a) until the RF envelope at the center of the drum is flat.

NOTE:

- (i) Adjust the slantness adjustment screw (a) in the clockwise direction within a 10 degree angle.
 - (ii) When the tracking of the center of the drum is adjusted, the FR envelope at the entrance side of the drum should remain flat.
 - (iii) Check that the tape runs in contact with the upper flange of the S Drawer Roller without any curling.
- (5) If the RF envelope is not flat in Step (4), adjust the height of TG-3 and TG-4.
 - (6) If the RF envelope is not flat in Steps (4) and (5), adjust the zenith of the Audio/CTL Head within the allowable range. Adjust the height of TG-3 and TG-4 again.
 - (7) Check that the clearance between the bottom edge of the tape and the lower flange of the Threading Roller is 0.01 mm to 0.15 mm. If it is out of the specification, adjust the height of the Threading Roller by turning the the Threading Roller Shaft.



<zenith adjustment for the Audio/CTL Head>



. When loosen the fixing screw of the Threading Roller, press the STOP button. When the Threading Roller comes near the Sug-ring Stopper, turn the power OFF. Loosen the fixing screw of the Threading Roller with a L-shaped hexagonal wrench. After adjustment, tighten the fixing screw and check that it meet the required specification.

. When tracking at the exit side of the drum is not good.

- (8) Turn the TRACKING control knob until the RF envelope amplitude is 70 to 80% of maximum.
- (9) If the RF envelope is not flat as shown in the figure 1, adjust the height of TG-4 until the RF envelope is flat. After this adjustment, adjust the height of TG-3 so that the tape runs in contact with the upper flange. If the RF envelope is not flat as shown in the figure 2, adjust the height of TG-3 and TG-4 until the RF envelope is flat. If it is not, adjust the zenith of the Audio/CTL Head within the allowable range. Adjust the height of TG-3 and TG-4 again.
- (10) Check that the clearance between the bottom edge of the tape and the lower flange of the Threading Roller is 0.01 mm to 0.15 mm. If it is out of the specification, adjust the height of the Threading Roller by turning the Threading Roller Shaft.

<entrance side>

Fig - 1

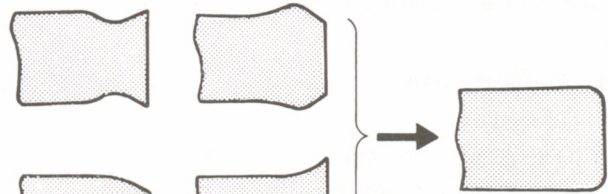
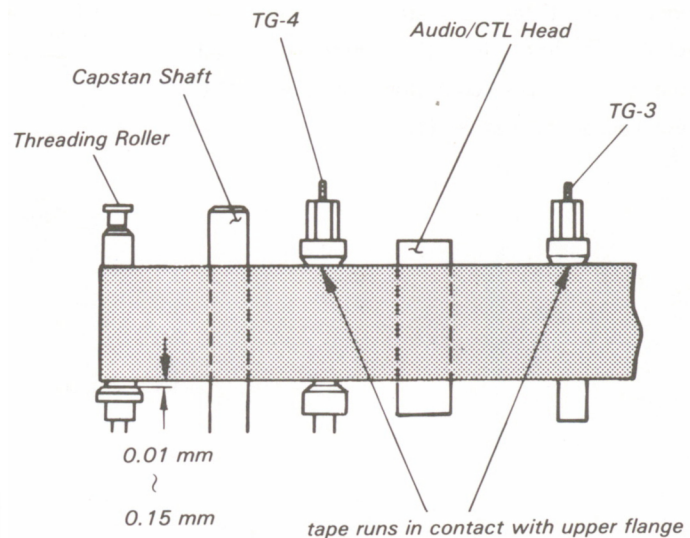
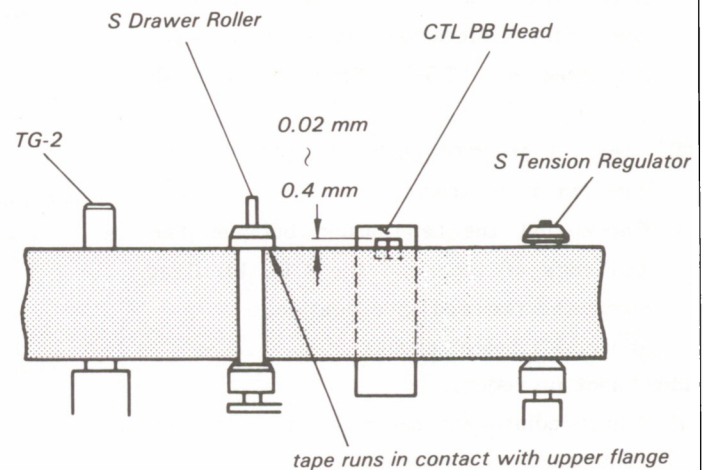
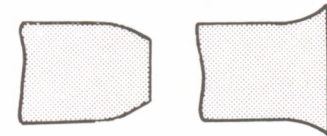


Fig - 2



7-7-2. CTL PB Head Height/Azimuth/Zenith Adjustments

- . The CTL PB Head Height, Azimuth, and Zenith Adjustments are closely related. When performing any of these adjustments, always perform the other two adjustments at the same time.

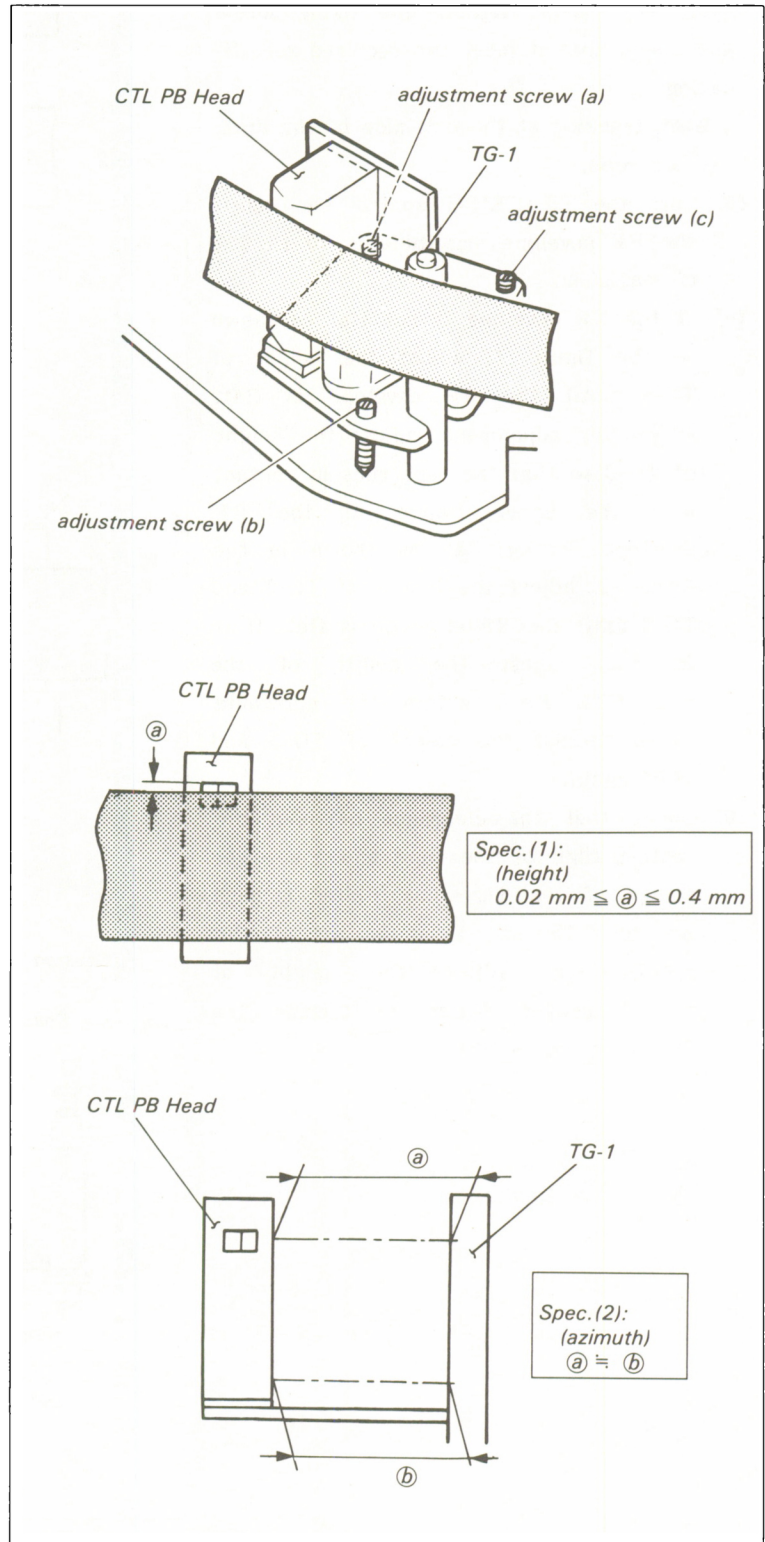
Tool: Flatness plate

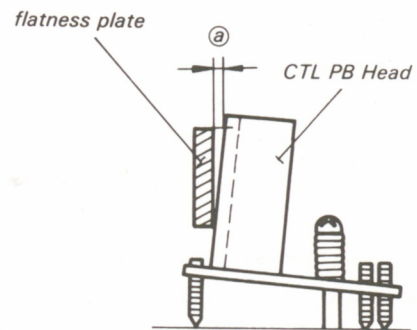
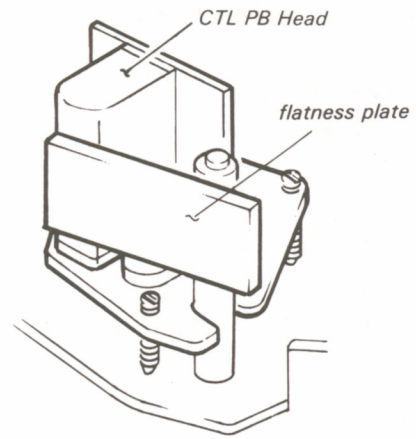
Check procedure:

- (1) Check that top and bottom clearances between the CTL PB Head and TG-1 meets the required specification. (Spec. 2 : azimuth check)
- (2) Check that the clearance between the CTL PB Head and the Flatness Plate meets the required specification, when the flatness plate is placed on the CTL PB Head and TG-1. (Spec. 3 : zenith check)
- (3) Insert a cassette tape, and put the unit into the PLAY mode.
- (4) Check that the relationship between the top edge of tape and the CTL PB Head meets the required specification. (Spec. 1 : height check)

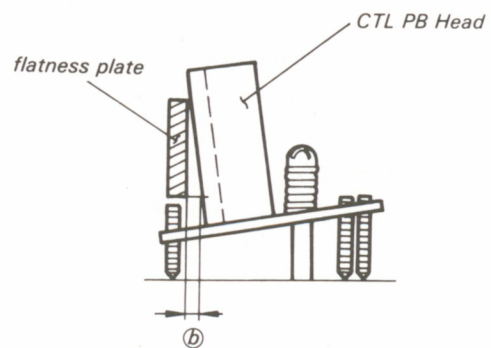
Adjustment procedure:

- (1) Adjust adjustment screw (a) to meet the required specification (2).
- (2) Adjust adjustment screw (b) to meet the required specification (3).
- (3) Turn the three adjustment screws an equal amount in the clockwise or counterclockwise direction to meet the required specification (1).





Spec. (3):
(zenith)
a ≤ 0.1 mm



7-7-3. Audio Head Height Adjustment

Tool: Alignment tape, RR5-3SA
VTVM or oscilloscope

Preparation:

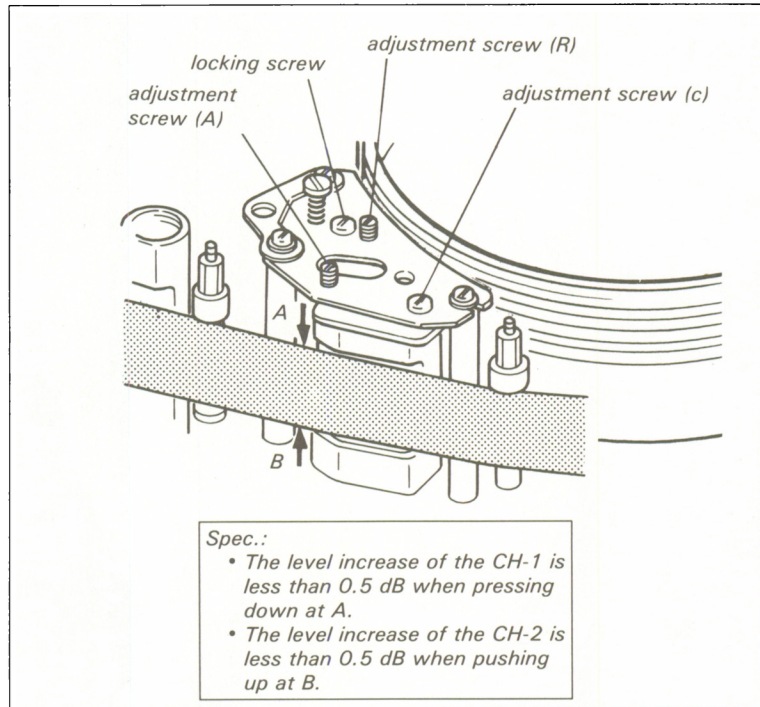
- (1) Connect the VTVM or oscilloscope to the AUDIO OUT CH-1 and CH-2 connectors of the connector panel.
- (2) Playback the audio 1 kHz signal portion of the alignment tape.

Check procedure:

- (1) Check that the CH-1 output level increase is less than 0.5 dB when pressing down at A. If it is out of the specification, perform adjustment procedures (1) and (2).
- (2) Check that the CH-2 output level increase is less than 0.5 dB when pushing up at B. If it is out of the specification, perform adjustment procedures (3) and (4).

Adjustment procedure:

- (1) Loosen the locking screw and turn adjustment screws (R) and (A) an equal amount in the counterclockwise direction. Turn adjustment screw (C) the same amount in the clockwise direction.
- (2) Tighten the locking screw and check the height of the Audio Head as described in the check procedure.
- (3) Loosen the locking screw and turn adjustment screws (R) and (A) an equal amount in the clockwise direction. Turn the adjustment screw (C) the same amount in the counterclockwise direction.
- (4) Tighten the locking screw and check the height of the Audio Head as described in the check procedure.



7-7-4. Audio Head Zenith Adjustment

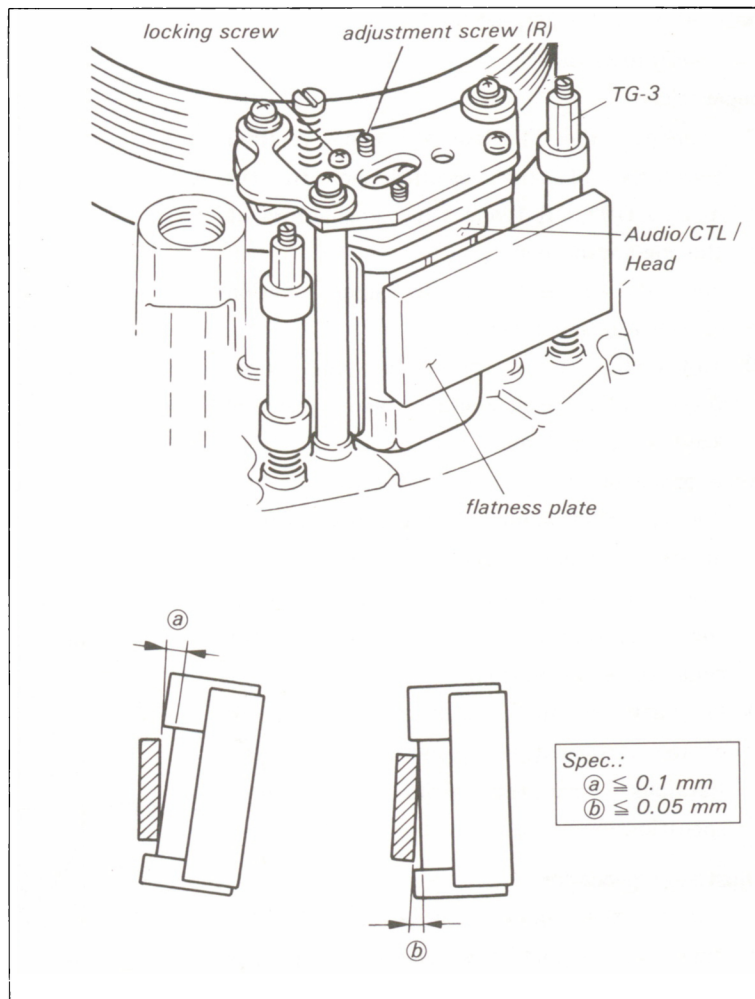
Tool: Flatness Plate

Check procedure:

- (1) When the Flatness Plate is set on the Audio Head and TG-3, check that the clearance between the Audio Head and the Flatness Plate meets the required specification.

Adjustment procedure:

- . When the clearance is out of spec. at the top of the Audio Head.
- (1) Turn adjustment screw (R) in the counterclockwise direction.
 - (2) Tighten the locking screw and check the zenith again.
- . When the clearance is out of spec. at the bottom of the Audio Head.
- (3) Loosen the locking screw 1/4 to 1/2 turn.
 - (4) Turn adjustment screw (R) in the clockwise direction.
 - (5) Tighten the locking screw and check the zenith again.



7-7-5. Audio Head Azimuth Adjustment

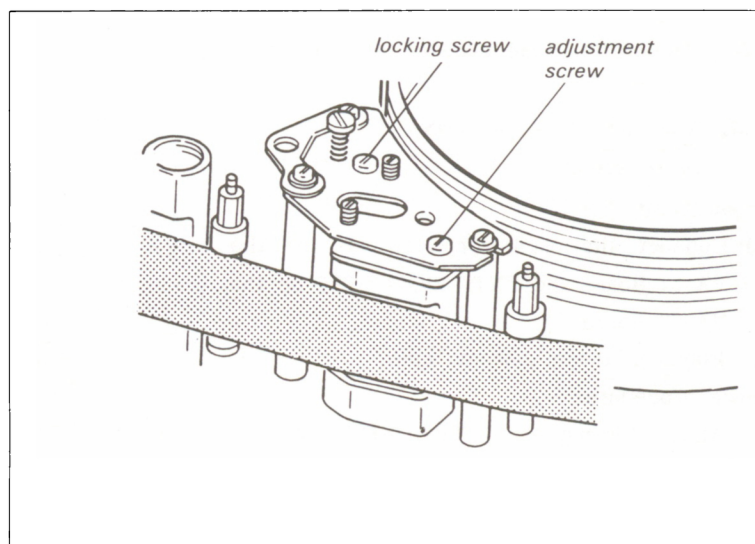
Tool: Alignment tape, RR5-3SA
VTVM or oscilloscope

Preparation:

- (1) Connect the VTVM or oscilloscope to the AUDIO OUT CH-1 or CH-2 connector of the connector panel.
- (2) Playback the audio 10 kHz signal portion of the alignment tape.

Adjustment procedure:

- (1) Loosen the locking screw and adjust the audio output level to maximum by turning the adjustment screw.
- (2) Tighten the locking screw and perform the check procedure.



7-7-6. Audio Head Phase Adjustment

Tool: Alignment tape, RR5-3SA
Oscilloscope

Preparation:

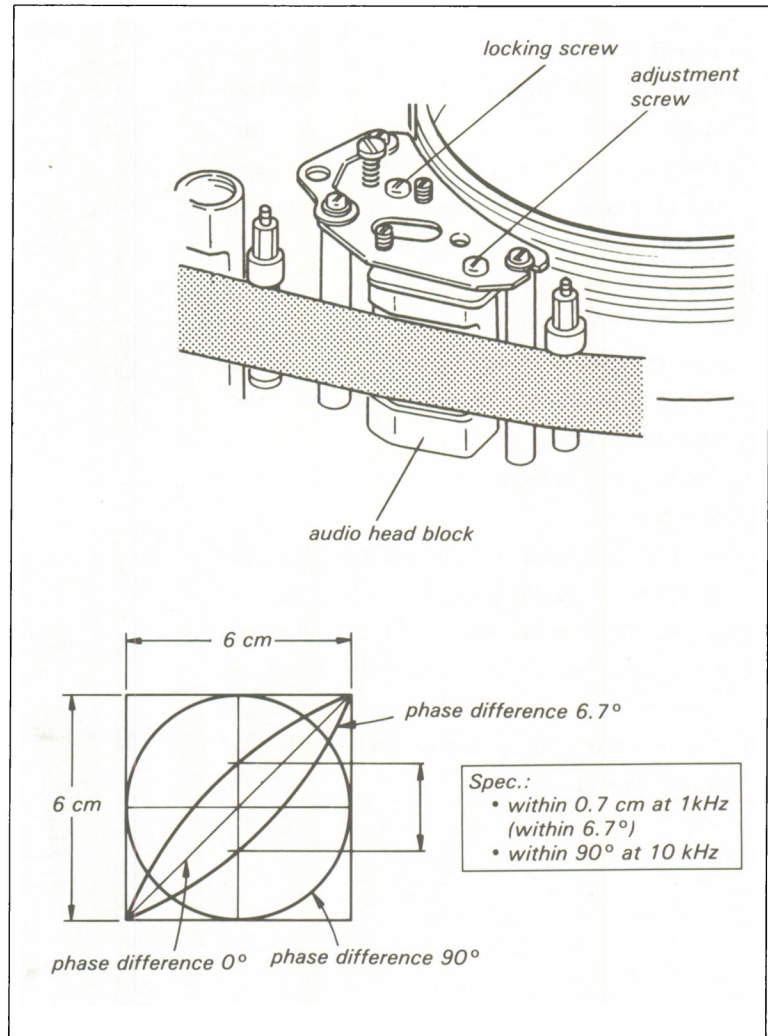
- (1) Connect the horizontal and vertical terminals of the oscilloscope to the AUDIO OUT CH-1 and CH-2 connectors of the connector panel.
- (2) Playback the audio 1 kHz signal portion of the alignment tape.
- (3) Adjust the scope for a lissajous waveform with horizontal and vertical amplitudes of 6 cm.

Check procedure:

- (1) Playback the audio 1 kHz signal portion of the alignment tape, and check that the vertical amplitude at the center in the horizontal direction meets the required specification.
- (2) Playback the audio 10 kHz signal portion of the alignment tape, and check that the lissajous waveform meets the required specification.

Adjustment procedure:

- (1) Loosen the locking screw 1/4 to 1/2 turn and adjust the phase by turning the adjustment screw.
- (2) Tighten the locking screw and check the phase again.



7-7-7. Audio/CTL Head Position Adjustment

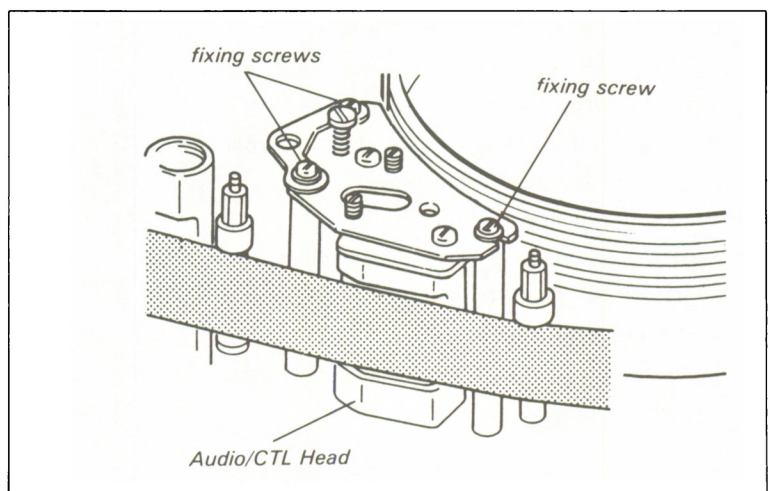
Tool: Alignment tape, RR5-3SA
Oscilloscope

Preparation:

- (1) Connect the oscilloscope to TP1 on the VA-57 Board and EXT.TRIG to TP2 on the VA-57 Board.
- (2) Playback the alignment tape.

Check procedure:

- (1) While turning the TRACKING control knob, check that the RF envelope has maximum amplitude at the center detent position of the TRACKING control knob.



Adjustment procedure:

- (1) Loosen the three fixing screws $1/4$ to $1/2$ turn.
- (2) Adjust the position of the Audio/CTL Head with a eccentric screwdriver to meet the required specification.

7-8. VIDEO HEAD DIHEDRAL ADJUSTMENT

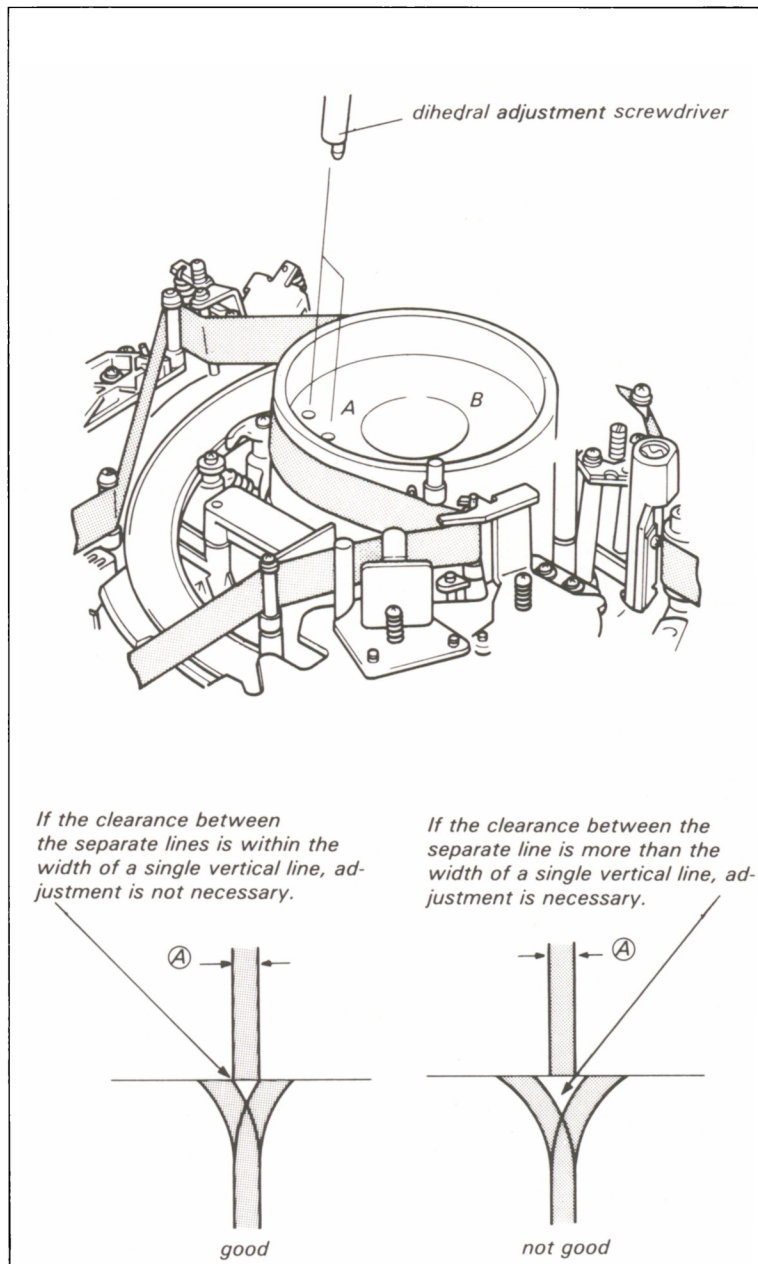
Tool: Dihedral adjustment screwdriver
Alignment tape, RR5-3SA
Monitor TV

Check procedure

- (1) Playback the monoscope signal portion of the alignment tape.
- (2) Check the distortion of the monoscope signal under the switching pulse. If the clearance between the separate lines is within the width of a single vertical line, adjustment is not necessary. If the clearance of the separate lines is more than the width of a vertical line, then adjustment is necessary.

Adjustment procedure:

- (1) Insert an eccentric screwdriver into the adjustment hole of the white lead and perform the dihedral adjustment.
- (2) Play back the monoscope signal portion. If the distortion has become worse, insert an eccentric screwdriver in the other adjustment hole and perform the dihedral adjustment.



SECTION 8

POWER SUPPLY/SYSTEM CONTROL ALIGNMENT

(Equipment Required)

- DC Voltmeter
- Alignment Tape: RR5-3SA (Part No.8-960-015-04)

8-1. SWITCHING REGULATOR ADJUSTMENT

8-1-1. REG+12V Adjustment

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	CN201-1/UR-14 12.1 $\pm$ 0.02 Vdc	RV651/UR-14

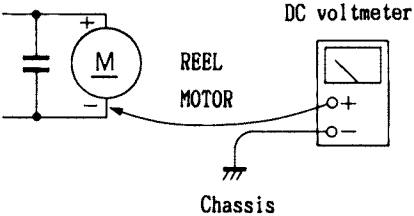
NOTE: If the REG 12V adjustment is attempted, re-alignment of the video system and servo system is required.

Do not attempt adjustment of the REG 12V power supply unless the units performance is obviously poor due to incorrect power supply voltage. If adjustments are made to the power supply, re-alignment of the video and servo systems is necessary.

8-2. TAPE SENSOR BALANCE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Insert a cassette tape. • STOP mode	TP2/SY-106B(J-2) $6.0 \pm 0.2 \text{ Vdc}$	RV1/SY-106B(J-2)

8-3. REEL MOTOR STILL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• PLAY-PAUSE mode without inserting a cassette tape. • Check that the reel motor rotation stops.	Reel motor (+) side/RM-39  $\text{DC voltage} = 400 \pm 20 \text{ mV}$	RV4/SY-106B(H-2)

. For reel torque adjustment, refer to Section 6.

RV3/SY-106B.....6-3. FWD Torque Adjustment

RV2/SY-106B.....6-4. REV Torque Adjustment

SECTION 9

SERVO SYSTEM ALIGNMENT

[Equipment Required]

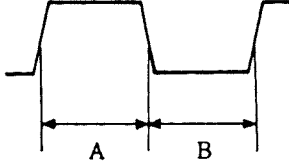
- Dual-trace Oscilloscope
- Frequency Counter
- AC Voltmeter
- Alignment Tape: RR5-3SA (Part No.8-960-015-04)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00 : 00 - 04 : 00	000 - 100	Monoscope	3 kHz, 0 dB
04 : 00 - 09 : 00	100 - 208	Color-bar	_____
09 : 00 - 14 : 00	208 - 300	R-F sweep	_____
14 : 00 - 16 : 00	300 - 335	Mod. 20T pulse	1 kHz, 0 dB
16 : 00 - 18 : 00	335 - 367	M.S. w/burst	10 kHz, -10 dB
18 : 00 - 20 : 00	367 - 398	Pseudo C.B. for DOC adj.	_____

9-1. CTL HEAD POSITION ADJUSTMENT

Refer to Section 7-7.

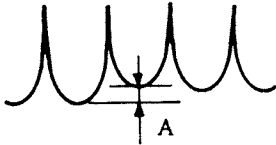
9-2. CAPSTAN FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	TP3/SV-93B (G-4)  $A = B \pm 5\%$ (Take the reading at the center of the jitter.)	RV100/SV-93B (G-4) TRIG: INT

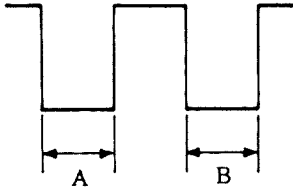
9-3. CAPSTAN SEARCH SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Short between TP3 and TP1/SV-106B with a shorting clip. • Short between TP11 and E1/SV-93B with a shorting clip. • Play back the color bar segment of the alignment tape. • SEARCH FWD mode • After the adjustment is completed, remove the shorting clips.	TP27/SV-93B (G-4) Frequency counter $60 \pm 10 \text{ Hz}$	RV101/SV-93B (H-5)

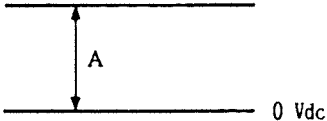
9-4. CAPSTAN STOP SERVO ADJUSTMENT (1)

machine conditions for adjustment	specifications	adjustments
• Short between TP16 and TP19/SV-93B with a shorting clip. • Play back the color bar segment of the alignment tape. • After the adjustment is completed, remove the shorting clip .	TP21/SV-93B (H-6)  $A \leq 40 \text{ mV}$	RV106/SV-93B (I-5) TRIG: INT

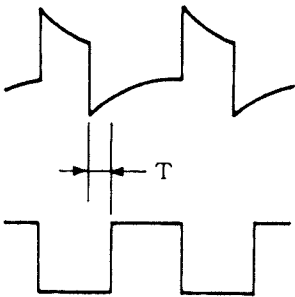
9-5. CAPSTAN FWD/REV DETECTION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	TP25/SV-93B (G-6)  $A = B \pm 10 \%$	RV201/SV-93B (I-5) TRIG: INT

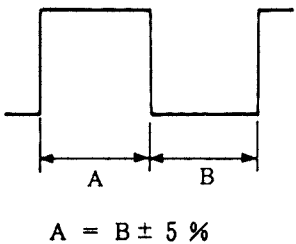
9-6. CAPSTAN STOP SERVO ADJUSTMENT (2)

machine conditions for adjustment	specifications	adjustments
- Short between TP6 and TP22/SV-93B with a shorting clip. - Play back the color bar segment of the alignment tape and set to the PAUSE mode. - After the adjustment is completed, remove the shorting clip.	TP26/SV-93B (E-3)  $A = 1.0 \pm 0.1 \text{ V}$	RV107/SV-93B (H-4) TRIG: INT

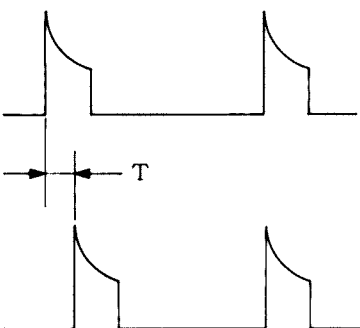
9-7. TRACKING MULTI ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
- Set the TRACKING control to the center click position. - Play back the color bar segment of the alignment tape.	TP4/SV-93B (K-4)  TP9/SV-93B (K-4) $T = 0 \pm 100 \mu\text{sec}$ (Take the reading at the center of the jitter.)	RV407/SV-93B (H-2) TRIG: INT (TP9/SV-93B)

9-8. DRUM FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	TP15/SV-93B(E-2)  $A = B \pm 5\%$	ⒶRV401/SV-93B(M-3) TRIG: INT

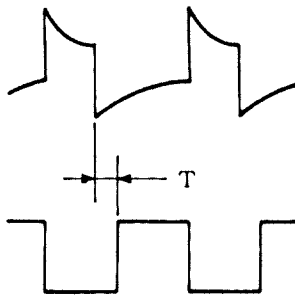
9-9. DRUM AFC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape. • PB and PAUSE modes	TP8/SV-93B(K-2)  $T = 0 \pm 0.1 \mu\text{sec}$	ⒶRV3/SV-93B(G-2) TRIG: INT

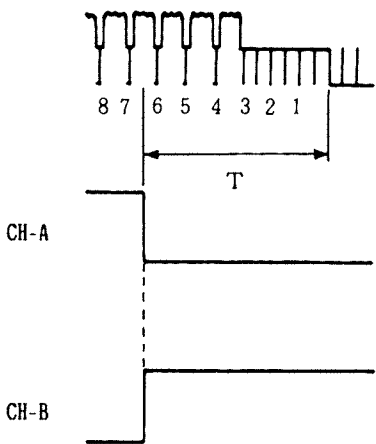
9-10. DRUM AFC TRANSIENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape. • PB and PAUSE modes	TP17/SV-93B(D-2) DC level in the PAUSE mode = Reference DC level in the PB mode = Reference ± 0.1 Vdc	ⒶRV1/SV-93B(F-2)

9-11. INSTANT START ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
- Set the TRACKING control to the center click position. - Play back the color bar segment of the alignment tape and set to the PAUSE mode. - Short between TP11 and E1/SV-93B with a shorting clip. - Cancel the PAUSE mode. - After the adjustment is completed, remove the shorting clip.	TP4/SV-93B(K-4)  TP9/SV-93B(K-4) $T = 0 \pm 1 \text{ msec}$ (Take the reading at the center of the jitter.)	RV102/SV-93B(H-3) TRIG: ING(TP9/SV-93B)

9-12. SWITCHING POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
- Play back the color bar segment of the alignment tape. - Short between TP8 and E501/SV-93B with a shorting clip. - Short between TP5 and E501/SV-93B with a shorting clip. - Set the TRACKING control to the center click position. - After the adjustment is completed, remove the shorting clips.	VIDEO OUT connector  TP12/SV-93D (C-2) CH-A CH-B $T = 6.5 \pm 0.5 \text{ H}$	CH-A: RV405/SV-93B(I-2) CH-B: RV403/SV-93B(L-3) TRIG: TP9/SV-93B(TV-V)

SECTION 10

AUDIO SYSTEM ALIGNMENT

(Equipment Required)

- AC Voltmeter
- Alignment Tape: RR5-3SA (Part No.8-960-015-04)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00 : 00 - 04 : 00	000 - 100	Monoscope	3 kHz, 0 dB
04 : 00 - 09 : 00	100 - 208	Color-bar	_____
09 : 00 - 14 : 00	208 - 300	R-F sweep	_____
14 : 00 - 16 : 00	300 - 335	Mod. 20T pulse	1 kHz, 0 dB
16 : 00 - 18 : 00	335 - 367	M.S. w/burst	10 kHz, -10 dB
18 : 00 - 20 : 00	367 - 398	Pseudo C.B. for DOC adj.	_____

10-1. AUDIO HEAD POSITION ADJUSTMENT

Refer to Section 7-7.

10-2. AUDIO PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments								
• Play back the 1 kHz, 3 kHz and 10 kHz segments of the alignment tape.	LINE OUT connector (terminated by 47 kΩ) <table><tr><th>Frequency</th><th>Level</th></tr><tr><td>1 kHz</td><td>Ref. (A dB)</td></tr><tr><td>3 kHz</td><td>A $\pm$ 1.5 dB</td></tr><tr><td>10 kHz</td><td>A $\pm$ 1.0 dB</td></tr></table>	Frequency	Level	1 kHz	Ref. (A dB)	3 kHz	A $\pm$ 1.5 dB	10 kHz	A $\pm$ 1.0 dB	CH-1: ●RV901/VA-57 (I-7) CH-2: ●RV902/VA-57 (H-7)
Frequency	Level									
1 kHz	Ref. (A dB)									
3 kHz	A $\pm$ 1.5 dB									
10 kHz	A $\pm$ 1.0 dB									

10-3. AUDIO PLAYBACK OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
Play back the 1 kHz segment of the alignment tape.	LINE OUT connector (terminated by 47 k Ω) -5 $\pm$ 0.5 dBS	CH-1: ⒶRV903/VA-57 (I-7) CH-2: ⒶRV904/VA-57 (H-7)

SECTION 11

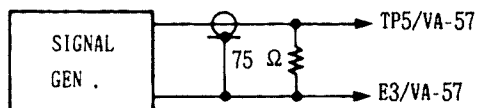
VIDEO SYSTEM ALIGNMENT

(Equipment Required)

- Dual-trace Oscilloscope
- Frequency Counter
- Video Sweep Signal Generator
- DC Voltmeter
- Alignment Tape: RR5-3SA (Part No.8-960-015-04)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00 : 00 - 04 : 00	000 - 100	Monoscope	3 kHz, 0 dB
04 : 00 - 09 : 00	100 - 208	Color-bar	_____
09 : 00 - 14 : 00	208 - 300	R-F sweep	_____
14 : 00 - 16 : 00	300 - 335	Mod. 20T pulse	1 kHz, 0 dB
16 : 00 - 18 : 00	335 - 367	M.S. w/burst	10 kHz, -10 dB
18 : 00 - 20 : 00	367 - 398	Pseudo C.B. for DOC adj.	_____

11-1. NOISE CANCELLER ADJUSTMENT

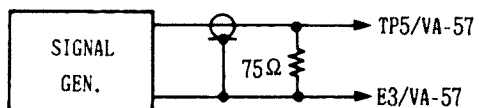


Locked Sweep

Marker: 1/1.14/2/3/4.43/5.5 MHz

machine conditions for adjustment	specifications	adjustments
Step 1. • Unsolder and open SLIT 1/VA-57. • Connect a signal generator to TP5 and E3/VA-57.	TP5/VA-57 (F-8) A waveform diagram showing a series of five rectangular pulses. Above the pulses are labels: 1, 2, 3, 4.43, and 5.5. To the right of the pulses, a vertical double-headed arrow indicates a scale of 50 mVp-p.	⊗ Level control/SIGNAL GEN.
Step 2. • Short between CN2-1 and E3/VA-57 with a shorting clip. • Short between TP11 and E6/VA-57 with a shorting clip. • VIDEO OUT connector: terminated by 75Ω • After the adjustment is completed, remove the shorting clips. Then solder and short SLIT 1/VA-57.	TP6/VA-57 (B-10) A waveform diagram showing a signal that starts with a large, rounded peak and then transitions into a series of smaller, regular pulses. A vertical line with a downward-pointing arrow is positioned at the start of the regular pulses, labeled with the letter "A". Minimize the level of A (2 MHz).	⊗ RV8/VA-57 (E-9) TRIG: TRIG OUT/SIGNAL GEN.

11-2. HIGH COMPONENT MIX ADJUSTMENT

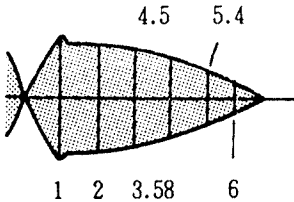


Locked Sweep

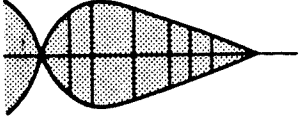
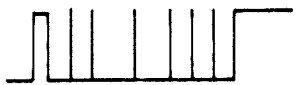
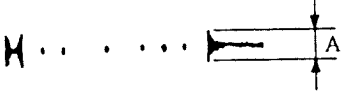
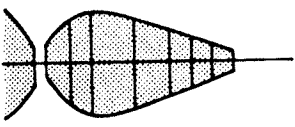
Marker: 1/1.4/2/3/4.43/5.5 MHz

machine conditions for adjustment	specifications	adjustments
Step 1. • Unsolder and open SLIT 1/VA-57. • Connect a signal generator to TP5 and E3/VA-57.	TP5/VA-57 (F-8) A waveform diagram showing a series of pulses. The pulses are labeled 1, 2, 3, 4.43, and 5.5. The amplitude of the pulses is indicated as 350 mVp-p.	Level control/SIGNAL GEN.
Step 2. • Short between CN2-1 and E3/VA-57 with a shorting clip. • Short between TP11 and E6/VA-57 with a shorting clip. • VIDEO OUT connector: terminated by 75Ω • After the adjustment is completed, remove the shorting clips. Then solder and short SLIT 1/VA-57.	TP6/VA-57 (B-10) 0.5 0.2 MHz level = Reference 0.5 MHz level = Reference + 10% - 0% A waveform diagram showing a single pulse labeled 0.5. The pulse is a sharp, narrow peak.	RV7/VA-57 (B-10) TRIG: TRIG OUT/SIGNAL GEN.

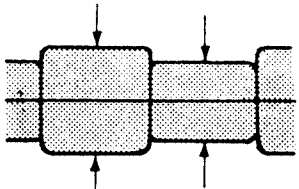
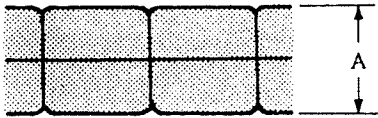
11-3. RF FREQUENCY RESPONSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments															
• Play back the RF sweep segment of the alignment tape. • Short between TP8 and E3/SV-93B(K-2) (M-2) with a shorting clip. • After the adjustment is completed, remove the shorting clip.	TP1/VA-57 (E-3)  <table><tr><th>2MHz</th><th>3.58MHz</th><th>4.5MHz</th><th>5.4MHz</th><th>6MHz</th></tr><tr><td>105</td><td>110</td><td>100%</td><td>90</td><td>80</td></tr><tr><td>+25% -30%</td><td>±10%</td><td>reference</td><td>±10%</td><td>±18% ±10%</td></tr></table>	2MHz	3.58MHz	4.5MHz	5.4MHz	6MHz	105	110	100%	90	80	+25% -30%	±10%	reference	±10%	±18% ±10%	CH-A: ●RV1/VA-57 (G-3) CH-B: ●RV2/VA-57 (G-2) TRIG: TP2/VA-57 (V) CH-A  CH-B 
2MHz	3.58MHz	4.5MHz	5.4MHz	6MHz													
105	110	100%	90	80													
+25% -30%	±10%	reference	±10%	±18% ±10%													

11-4. DROPOUT COMPENSATION SENSITIVITY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Short between TP8 and E3/SV-93B(K-2) (M-2) with a shorting clip. • Play back the RF sweep segment of the alignment tape. • Set the TRACKING control to the center click position. • Oscilloscope: CHOP mode → ADD mode • After the adjustment is completed, remove the shorting clip.	TP1/VA-57 (E-3)  TP3/VA-57 (H-4)  ADD mode   A = 20 ~ 35 mV	●RV5/VA-57 (I-4) TRIG: TP2/VA-57 (V)

11-5. RF BALANCE/LEVEL ADJUSTMENT

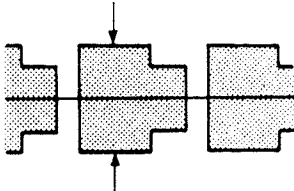
machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape. • Adjust the TRACKING control so that the RF level is maximized at TP1/VA-57.	TP1/VA-57 (E-3)  CH-A CH-B CH-A level = CH-B level	RV3/VA-57 (F-3) TRIG: TP2/VA-57 (V)
	TP1/VA-57 (E-3)  A = 300 ± 30 mV	RV4/VA-57 (F-3) TRIG: TP2/VA-57 (V)

11-6. CHROMA DEMODULATOR ADJUSTMENT

11-6-1. Reference 3.58 MHz Adjustment

machine conditions for adjustment	specifications	adjustments
• Insert the alignment tape.	TP15/VA-57 (C-7)	● CV1/VA-57 (A-8)
• STOP mode	3,579,545 ± 5 Hz	
• Three or more minutes should elapse after POWER ON.		

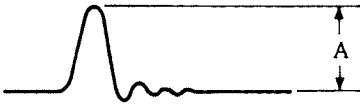
11-6-2. ACC Level Preset

machine conditions for adjustment	specifications	adjustments
Play back the color bar segment of the alignment tape.	TP10/VA-57(A-3)  $0.6 \pm 0.1 \text{ V}$	⌚RV10/VA-57(C-3) TRIG: TP2/VA-57(V)

11-6-3. VCO DC Level Adjustment

machine conditions for adjustment	specifications	adjustments
Play back the color bar segment of the alignment tape.	TP9/VA-57(B-3) $8.1 \pm 0.1 \text{ Vdc}$	⌚RV9/VA-57(B-5)

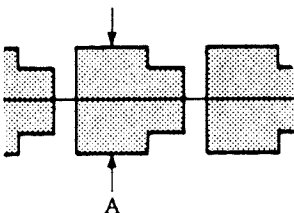
11-6-4. APC Gain Adjustment

machine conditions for adjustment	specifications	adjustments
Play back the color bar segment of the alignment tape.	TP17/VA-57(B-3)  $A = 3.8 \pm 0.1 \text{ V}$	⌚RV13/VA-57(B-2) TRIG: INT

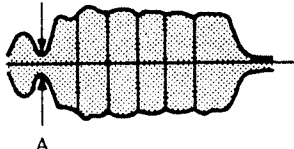
11-6-5. 4.27 MHz Tuning Adjustment

machine conditions for adjustment	specifications	adjustments
Play back the color bar segment of the alignment tape.	TP16/VA-57(D-6) $4,267,959 \pm 1000 \text{ Hz}$ (Level $\geq 1.0 \text{ Vp-p}$)	⌚LV2/VA-57(C-7) ⌚LV3/VA-57(D-6)

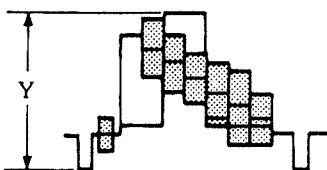
11-6-6. ACC Level Adjustment

machine conditions for adjustment	specifications	adjustments
Play back the color bar segment of the alignment tape.	TP10/VA-57(A-3)  $A = 0.6 \pm 0.05 \text{ V}$	RV10/VA-57(C-3) TRIG: TP2/VA-57(V)

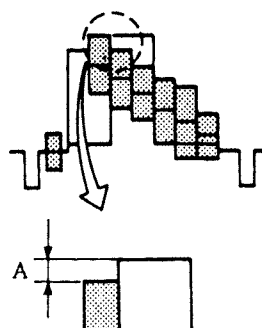
11-6-7. Converter Balance Adjustment

machine conditions for adjustment	specifications	adjustments
Play back the color bar segment of the alignment tape.	TP10/VA-57(A-3)  $A (\text{carrier leak}) \leq 50 \text{ mV}$	RV11/VA-57(D-4) TRIG: INT(H)

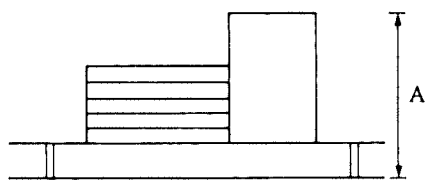
11-6-8. Y Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape. • VIDEO OUT connector: terminated by 75Ω	TP6/VA-57(B-10)  $Y \text{ level} = 1.0 \pm 0.05 \text{ V}$	RV6/VA-57(E-6) TRIG: INT(TV-H)

11-6-9. Chroma Mix Level Adjustment

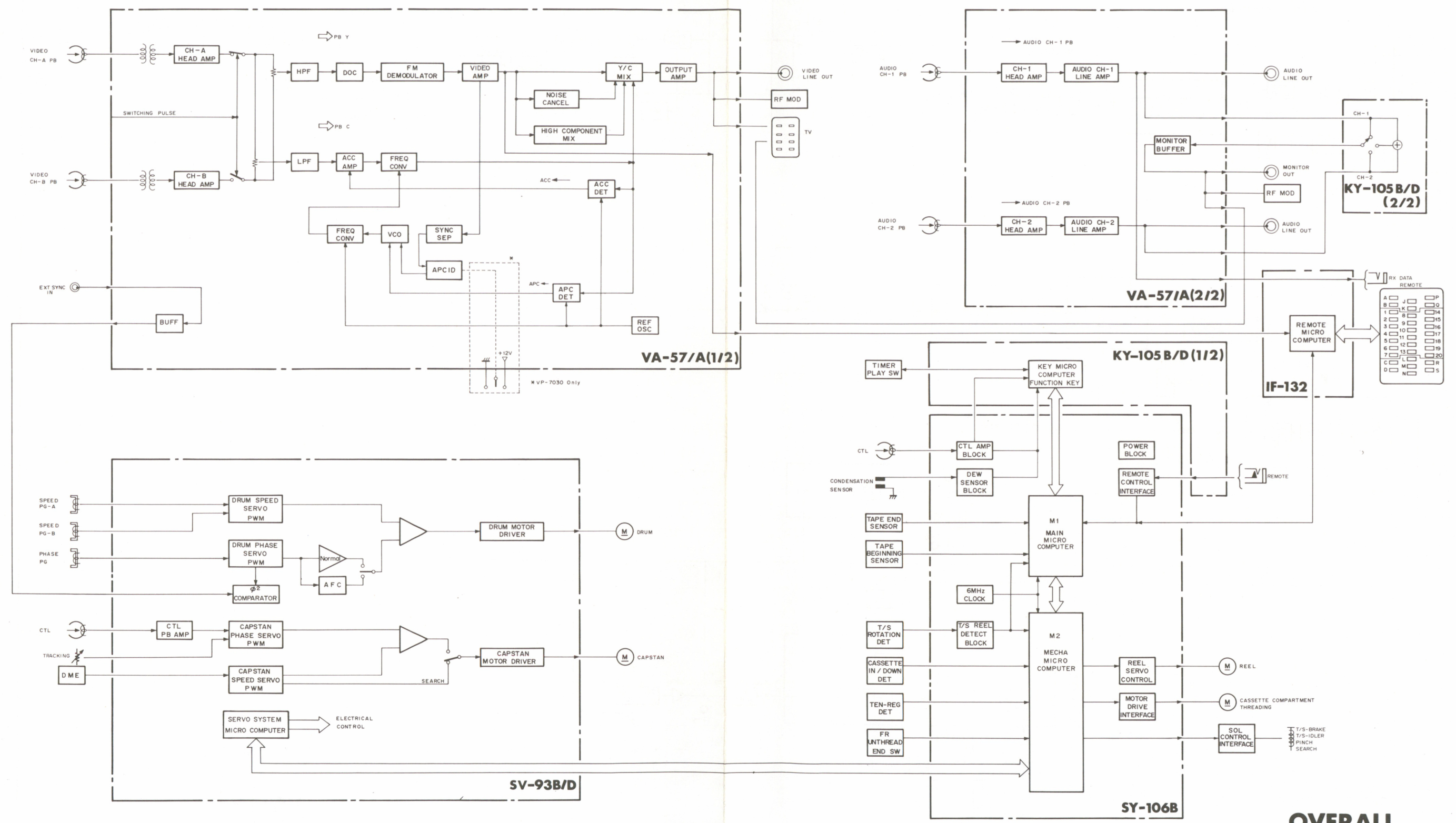
machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	TP6/VA-57(B-10)  $A = 0$	RV12/VA-57(A-4) TRIG: INT(TV-H)

11-6-10. Video Level Adjustment for BKU-701

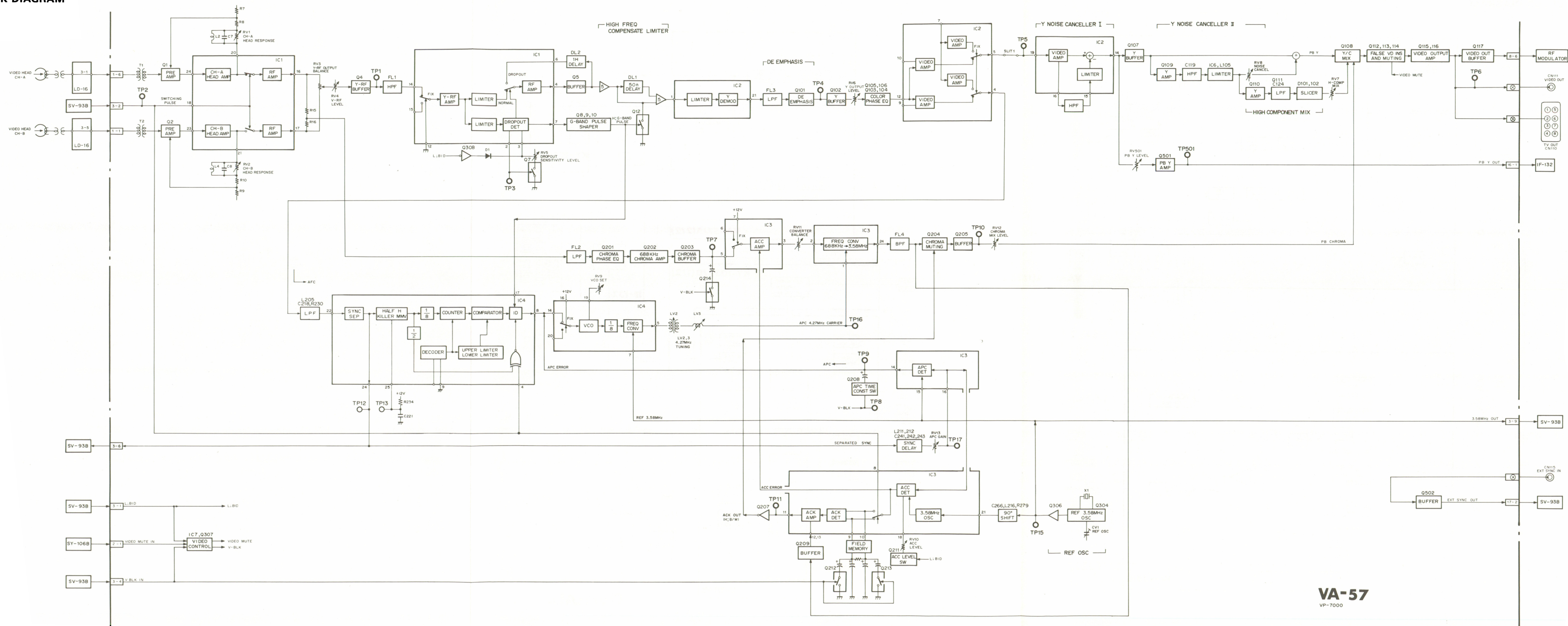
machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	TP501/VA-57(E-4)  $A = 0.7 \pm 0.05 \text{ V}_{p-p}$	RV501/VA-57(D-8) TRIG: INT

OVERALL
BLOCK DIAGRAM

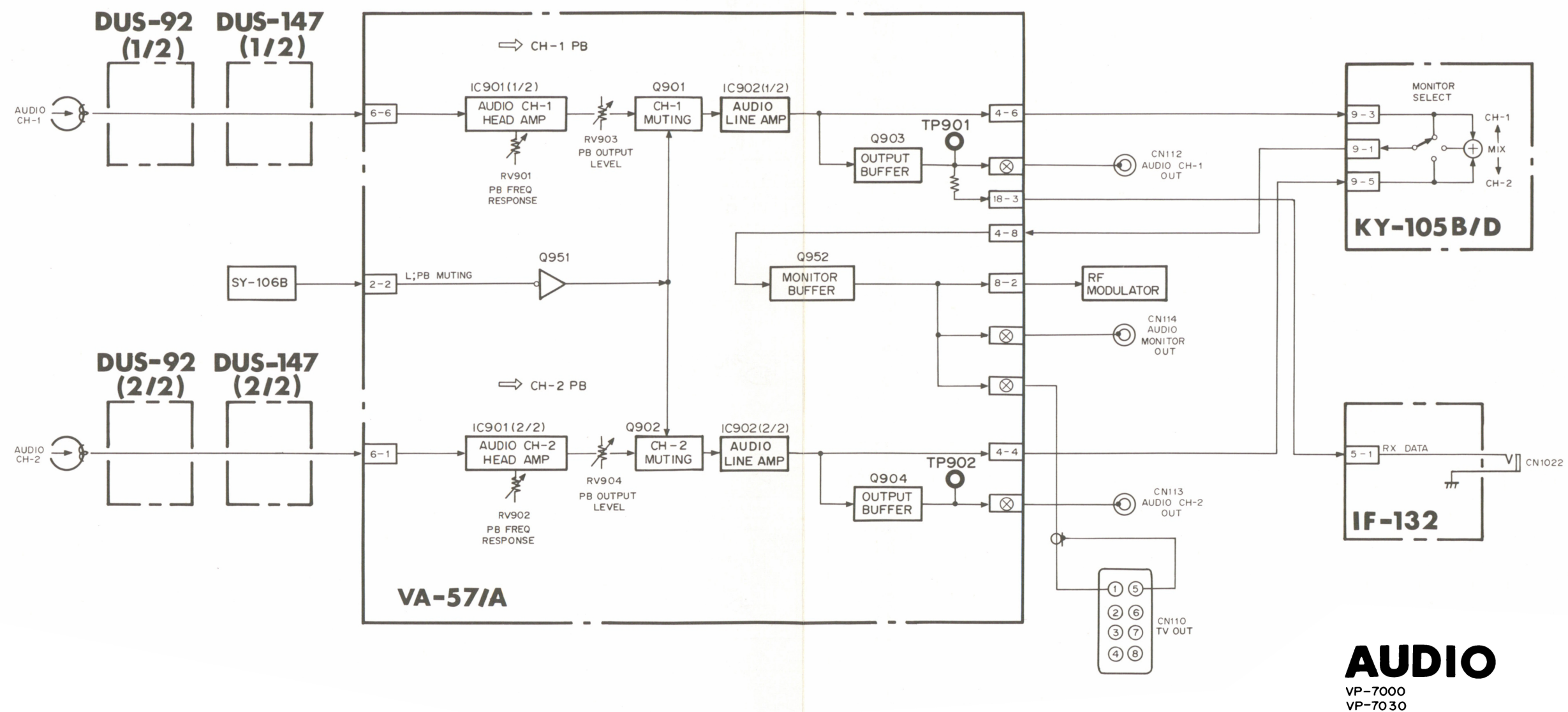
SECTION 12
BLOCK DIAGRAM



OVERALL
VP-7000
VP-7030

VIDEO SYSTEM
BLOCK DIAGRAM

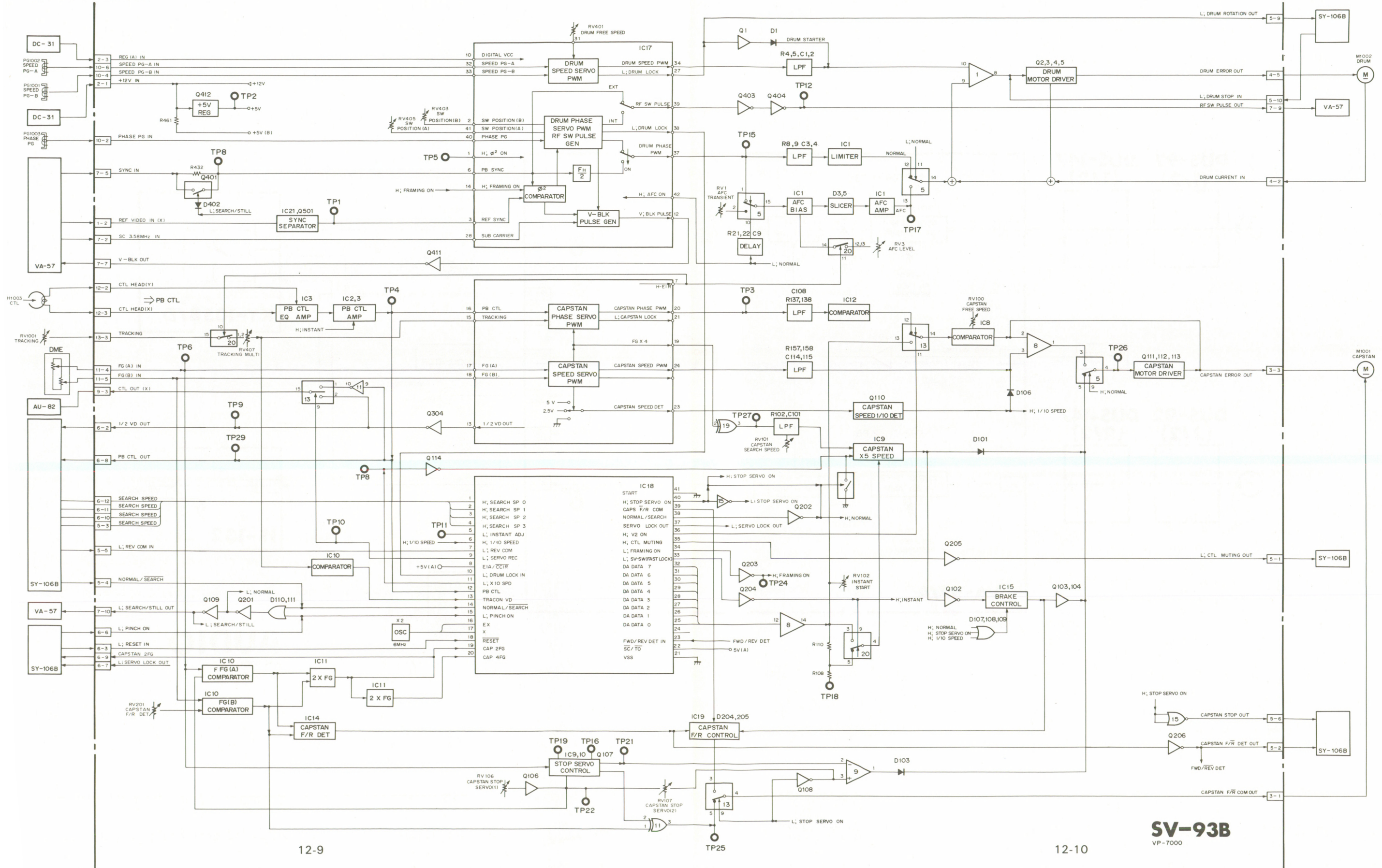
AUDIO SYSTEM
BLOCK DIAGRAM



AUDIO

VP-7000
VP-7030

SERVO SYSTEM BLOCK DIAGRAM



SECTION 13

SEMICONDUCTOR ELECTRODES

ここに記載されているIC、トランジスタ、ダイオードは、それぞれの機能を等価的に表わしたものです。したがって互換性を表わすものではありません。(互換性のない型名が併記されている事もあります。) 部品の交換をする時は、SPARE PARTS の章を参照して下さい。

ICs, transistors and diodes whoses functions are equivalent are described here. Therefore, incompatible device names may be described together. For parts replacement, refer to the Spare Parts section in this manual.

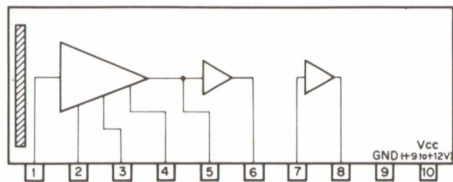
IC	PAGE	IC	PAGE	TRANSISTOR	PAGE
BX389	13-3	MC74HC244N	13-8	2SA768	13-10
BX389L	13-3	MC10116L	13-5	2SA771	13-10
BX3915A	13-3			2SA1048	13-10
CX134A	13-3	NJM2903D	13-8	2SA1115	13-10
CX135	13-3	NJM4558D	13-8	2SA1175	13-10
CX188	13-3	NJM4558S	13-8	2SA1175F	13-10
CX194B	13-4			2SA933S	13-10
CX859	13-4	SN74HC244N	13-8		
		TA7060AP	13-8	2SB733	13-10
HD10116	13-5	TC40H000P	13-9	2SC403SP	13-10
HD10116L	13-5	TC74HC244P	13-8	2SC1740	13-10
HD14013BP	13-9	TC4001BP	13-9	2SC1740S	13-10
HD14053BP	13-5	TC4001UBP	13-9	2SC1826	13-10
HD14538BP	13-5	TC4030BP	13-9	2SC2458	13-10
LA3160	13-5	TC4030BPHB	13-9	2SC2603F	13-10
LA3161	13-5	TC4053BP	13-5	2SC2785E	13-10
M54517P	13-5	TC4069UBP	13-9	2SC2785F	13-10
M54529AP	13-5	TC4538BP	13-5	2SC2878	13-10
M54543L	13-5	TC504013BP	13-9	2SC3068	13-10
MB84013B	13-9	μPC324C	13-9	2SD774	13-10
MB88201-173N	13-6	μPC339C	13-9	2SD789	13-10
MB88505P	13-7	μPC358C	13-9	2SD894	13-10
MB88525P	13-8	μPC393C	13-8	2SD998	13-10
		μPD4558C	13-8	2SD1111	13-10
		μPD4030BC	13-9	2SD1682	13-10
				2SK152	13-10
				2SK523	13-10
				DTA124XS	13-10
				DTC124XS	13-10
				DTC144ES	13-10
				SPS102	13-10

等価回路はICメーカーのData Bookに従いました。

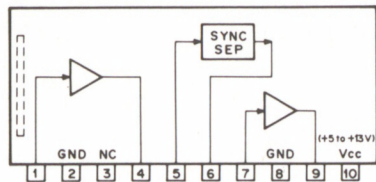
The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

DIODE	PAGE
10E-2	13-11
1SS119	13-11
1SS133	13-11
1SS148	13-11
BR5104S	13-11
ERB12-??	13-11
GL-5HD5: RED	13-11
GP-1L53	13-11
PS4005	13-11
RD??EB	13-11
RD??ESB	13-11
SIB01-02	13-11
TLUG154: GREEN	13-11
TLUY154: YELLOW	13-11
TLY255: YELLOW	13-11
U05E	13-11
U05G	13-11

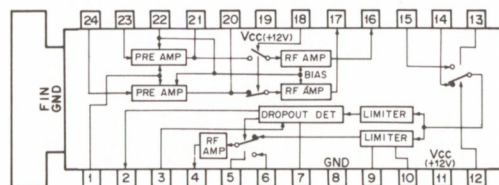
BX389 (SONY)
BX389L (ROHM)
VIDEO AMPLIFIER
— PRINTED SIDE —



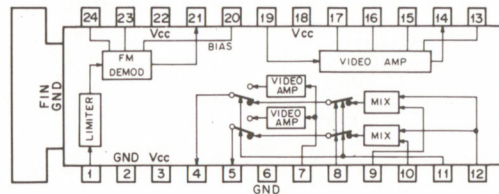
BX3915A (SONY)
SYNC SEPARATOR
— PRINTED SIDE —



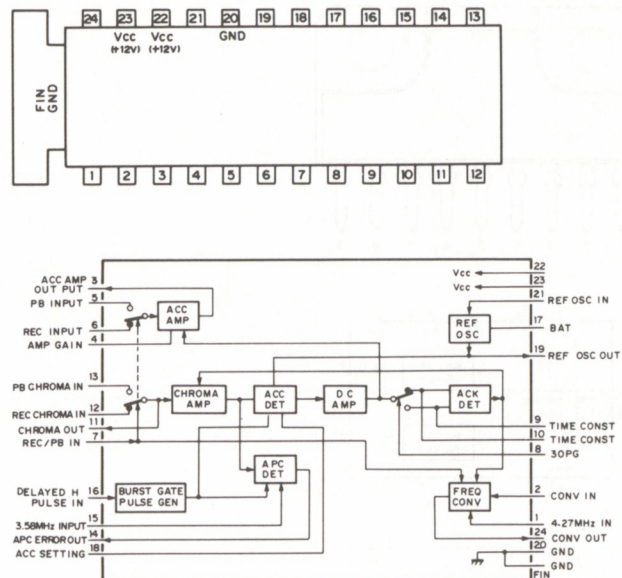
CX134A (SONY)
HEAD AMP/DROPOUT COMPENSATOR
— TOP VIEW —



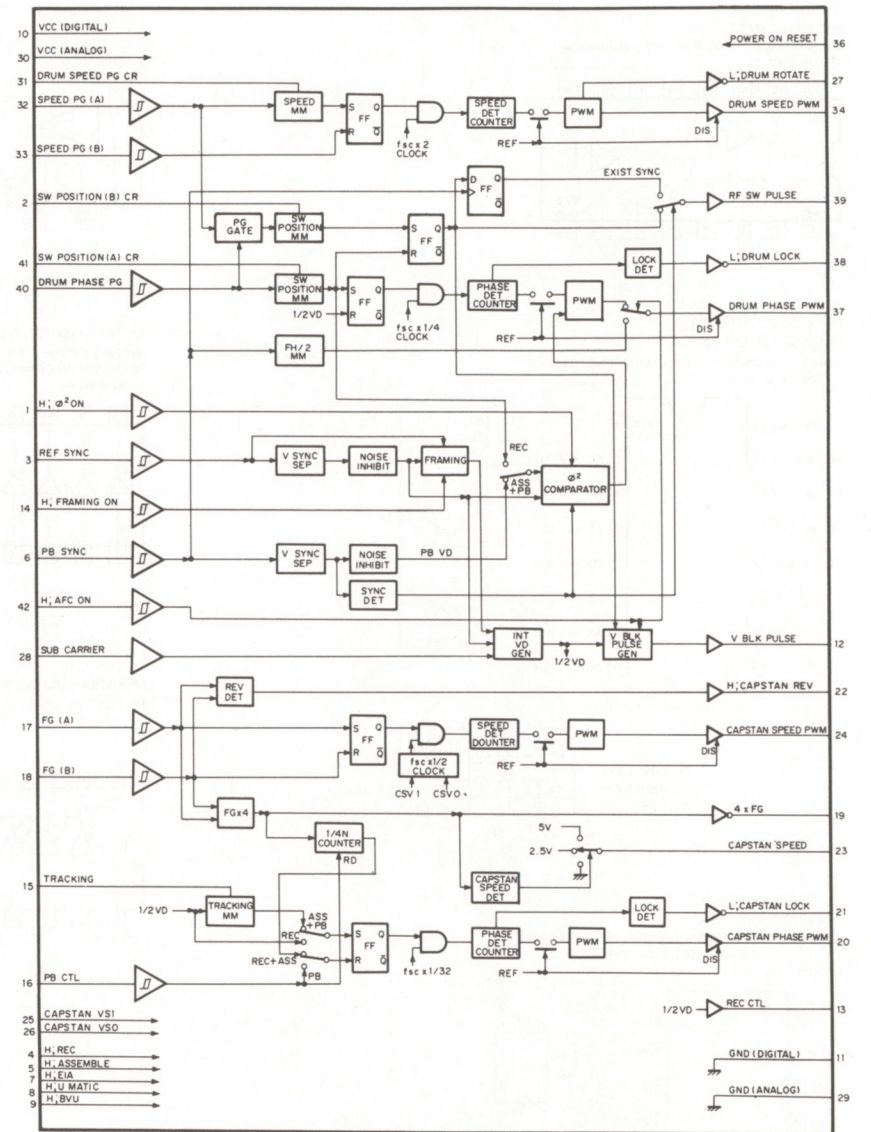
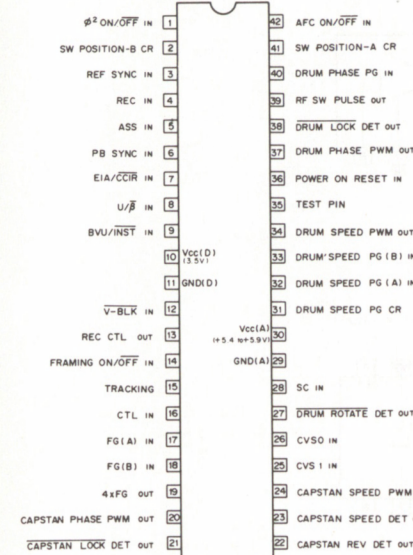
CX135 (SONY)
— TOP VIEW —



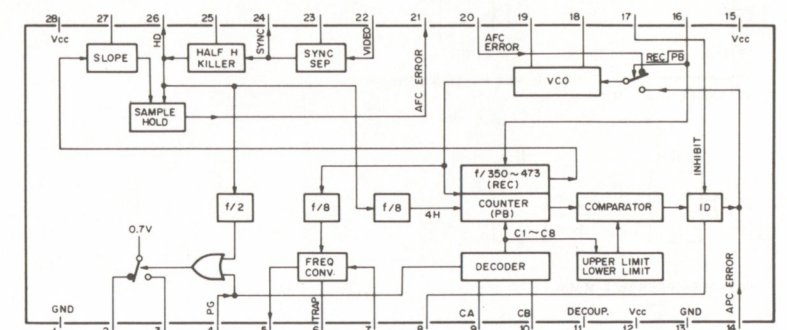
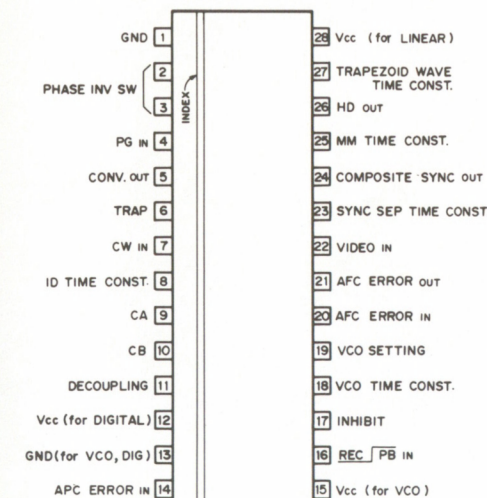
CX188
CHROMINANCE SIGNAL PROCESSOR
— TOP VIEW —



CX194B (SONY)
DRUM/CAPSTAN PWM SERVO
— TOP VIEW —



CX859 (SONY)
— TOP VIEW —



DECODER TRUTH TABLE

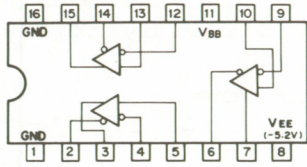
CB	CA	LOW	OPEN	HIGH
LOW	C1	C7	—	—
OPEN	C4	C5	C6	—
HIGH	—	*C2	C3	C8

* PG: L --- C2
PG: H --- C3

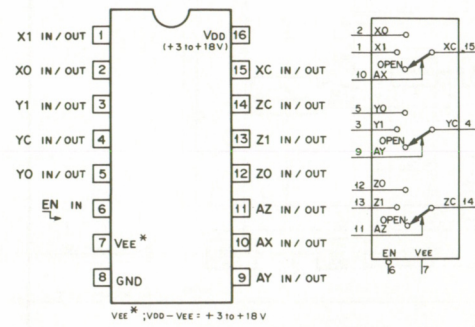
AFC/APC PRESET DATA

AFC COUNT DOWN	APC ID COUNT	UPPER LIM.	LOWER LIM.
C1	f/473	105	95
C2	f/351	129	119
C3	f/353	137	127
C4	f/351	118	104
C5	f/351	131	117
C6	f/351	144	130
C7	f/350	136	104
C8	—	125	115

HD10116 (HITACHI)
MC10116L (MOTOROLA)
ECL DIFFERENTIAL OR/NOR LINE RECEIVER
— TOP VIEW —



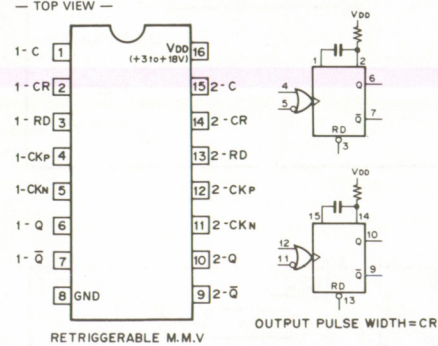
HD14053BP (HITACHI)
TC4053BP (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



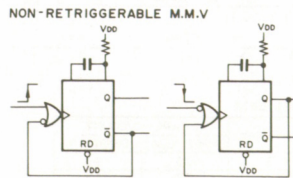
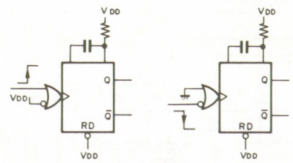
CONT. INPUTS	ON
EN A (X,Y,Z)	CHANNEL
0	0
1	1
X	X
Y	Y
Z	Z
0	0
1	1
X	X
Y	Y
Z	Z

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE.

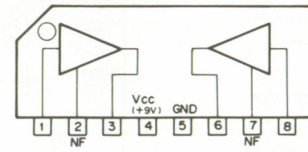
HD14538BP (HITACHI)
TC4538BP (TOSHIBA)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
— TOP VIEW —



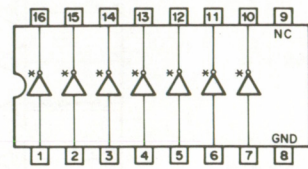
OUTPUT PULSE WIDTH = CR



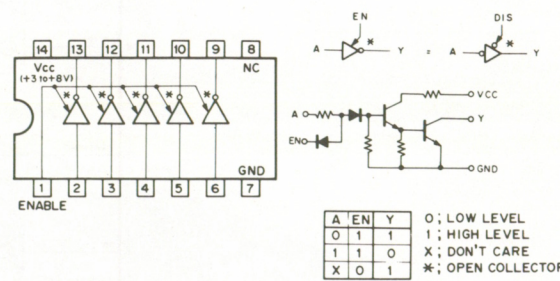
LA3160 (SANYO)
LA3161 (SANYO)
2-CHANNEL PREAMPLIFIER
— SIDE VIEW —



M54517P (MITSUBISHI)
INVERTER WITH OPEN-COLLECTOR
(DARLINGTON-CONNECTED TRANSISTOR ARRAY)
— TOP VIEW —



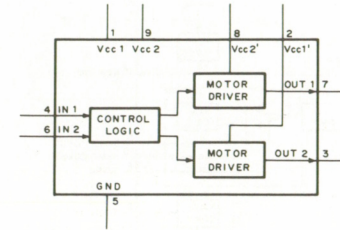
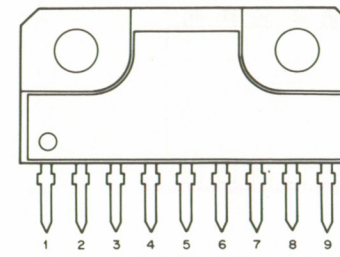
M54529AP (MITSUBISHI)
TRANSISTOR ARRAY
— TOP VIEW —



A	EN	Y
0	1	1
1	1	0
X	0	1

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
*: OPEN COLLECTOR

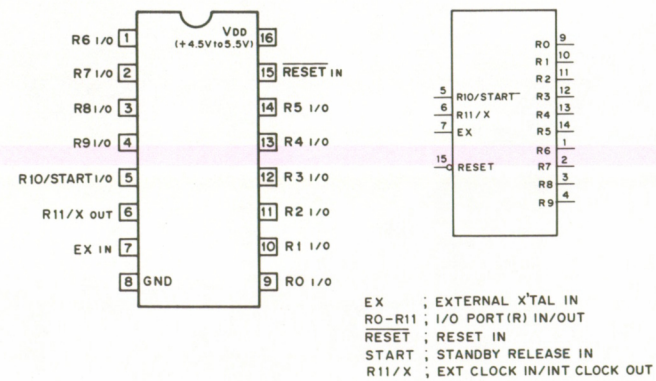
M54543L (MITSUBISHI)
BI-DIRECTIONAL MOTOR DRIVER
— SIDE VIEW —



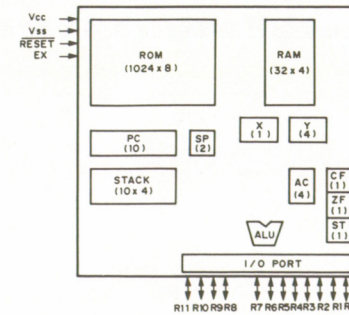
IN	OUT	MODE
1	2	1
0	0	Z
1	0	1
0	1	0
1	1	0

0: LOW LEVEL
1: HIGH LEVEL
Z: HIGH IMPEDANCE

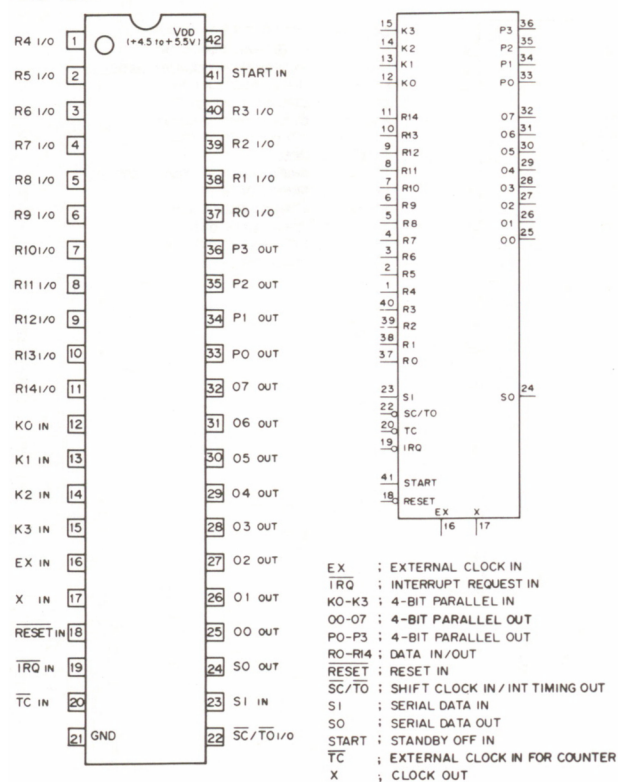
MB88201-173N (FUJITSU)
C-MOS 4 BIT MICROCOMPUTER
— TOP VIEW —



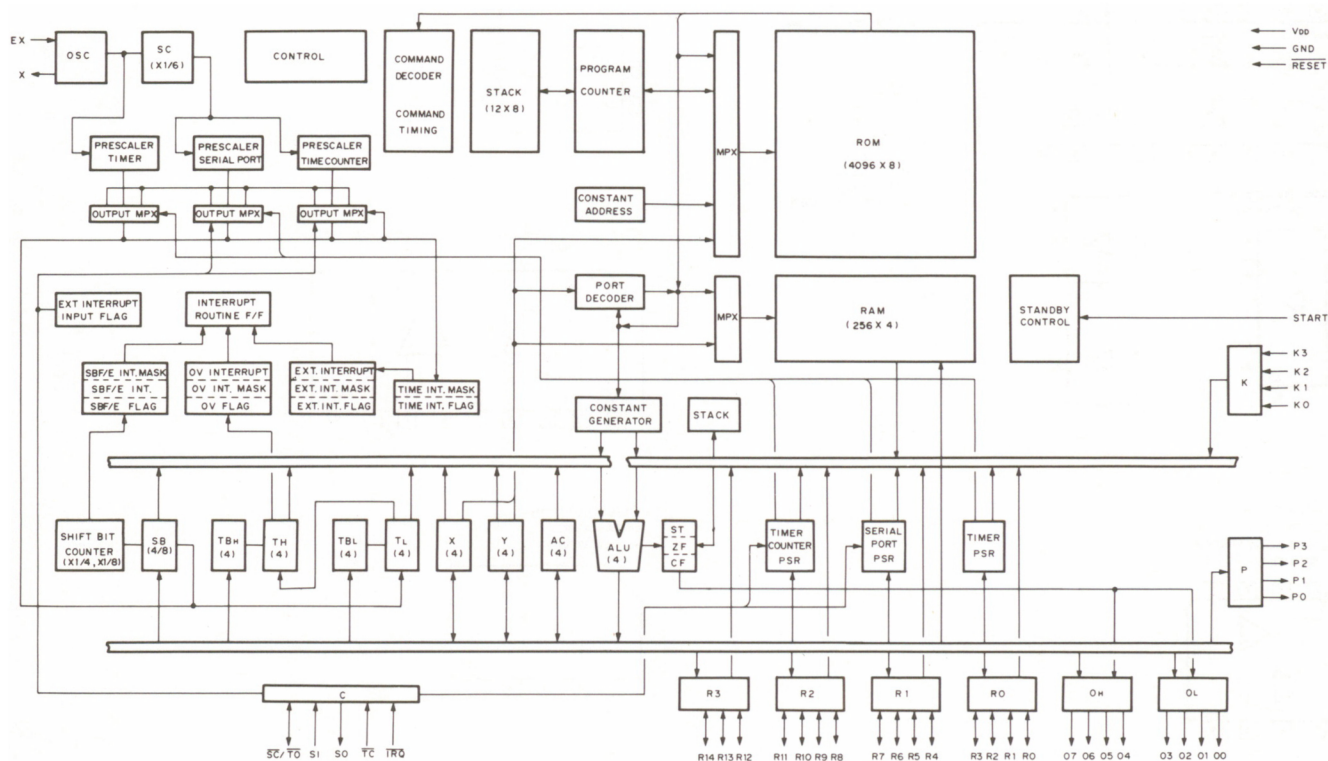
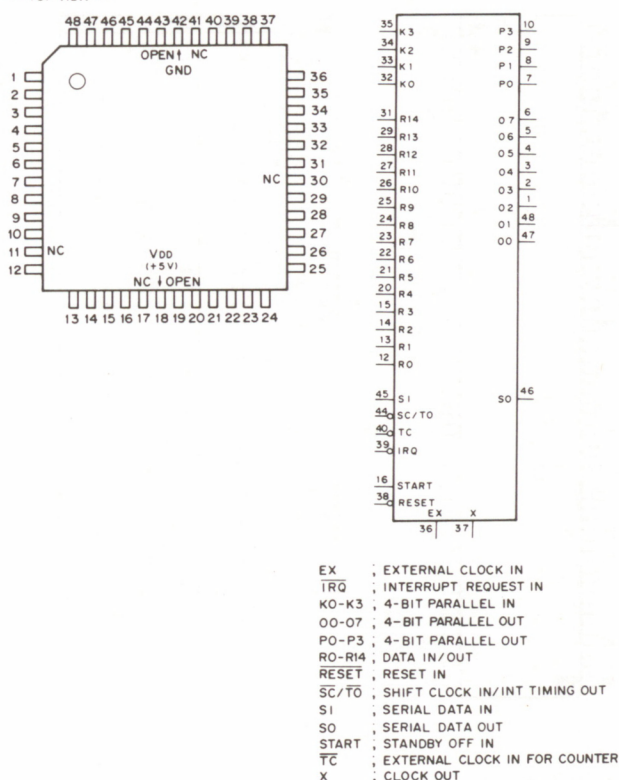
EX: EXTERNAL X'TAL IN
RO-R11: I/O PORT(R) IN/OUT
RESET: RESET IN
START: STANDBY RELEASE IN
R11/X: EXT CLOCK IN/INT CLOCK OUT



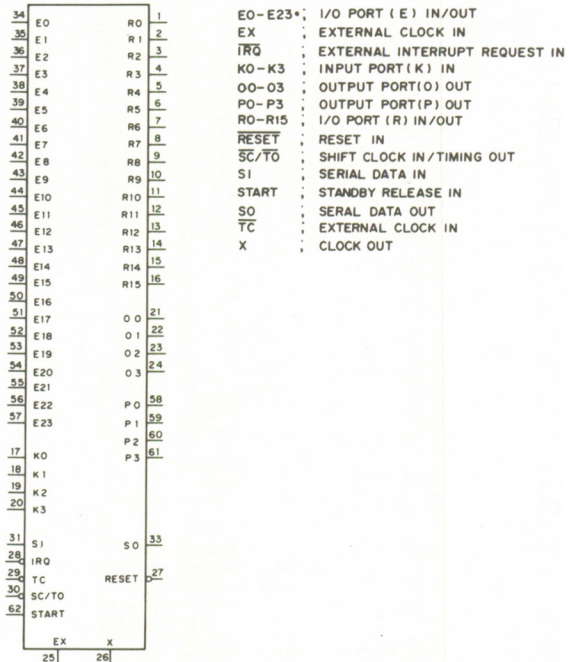
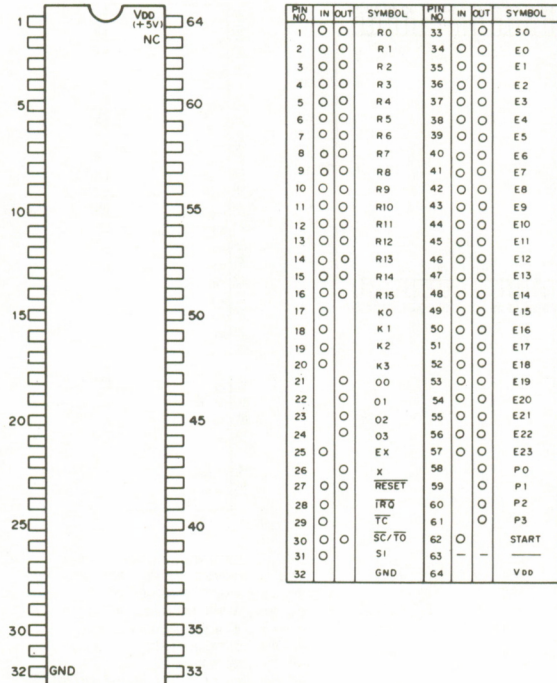
MB88505P (FUJITSU)
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —



— TOP VIEW —

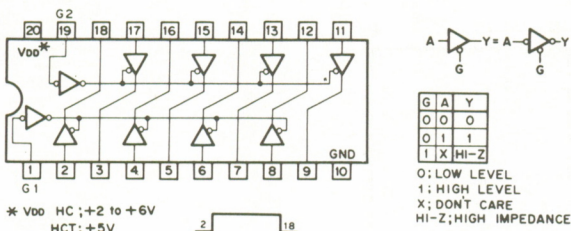


MB88525P (FUJITSU)
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —

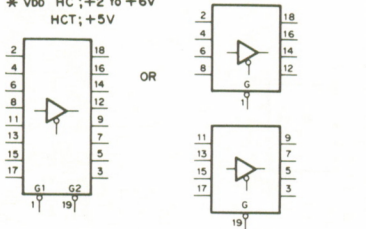


E0-E23: I/O PORT (E) IN/OUT
EX : EXTERNAL CLOCK IN
IRQ : EXTERNAL INTERRUPT REQUEST IN
K0-K3 : INPUT PORT (K) IN
O0-O3 : OUTPUT PORT (O) OUT
P0-P3 : OUTPUT PORT (P) OUT
R0-R15 : I/O PORT (R) IN/OUT
RESET : RESET IN
SC/TO : SHIFT CLOCK IN/TIMING OUT
SI : SERIAL DATA IN
START : STANDBY RELEASE IN
SO : SERIAL DATA OUT
TC : EXTERNAL CLOCK IN
X : CLOCK OUT

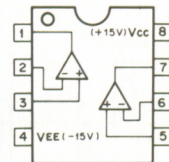
MC74HC244N (MOTOROLA)
SN74HC244N (TI)
TC74HC244P (TOSHIBA)
C-MOS BUS BUFFER WITH 3-STATE OUTPUT
— TOP VIEW —



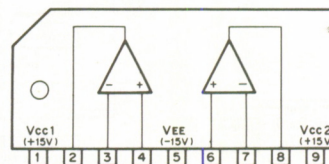
* VDD HC: +2 to +6V
HCT: +5V



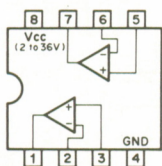
NJM4558D (JRC)
uPC4558C (NEC)
OPERATIONAL AMPLIFIER
— TOP VIEW —



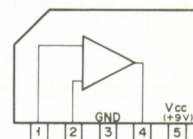
NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —



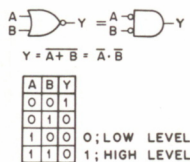
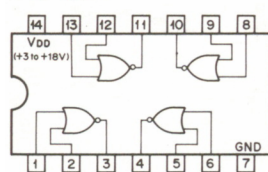
NJM2903D (JRC)
uPC393C (NEC)
VOLTAGE COMPARATOR
— TOP VIEW —



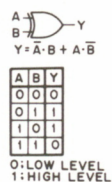
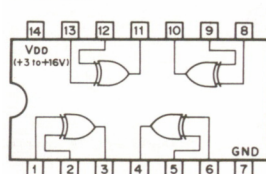
TA7060AP (TOSHIBA)
LINEAR AMP
— SIDE VIEW —



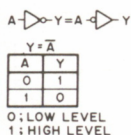
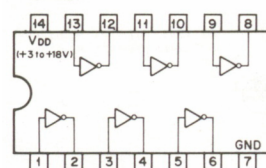
TC4001BP (TOSHIBA)
TC4001UBP (TOSHIBA)
C-MOS 2-INPUT NOR GATE
— TOP VIEW —



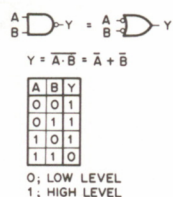
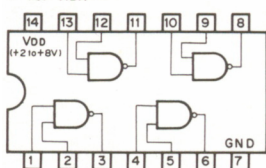
TC4030BP (TOSHIBA)
TC4030BPHB (TOSHIBA)
C-MOS EXCLUSIVE OR GATE
— TOP VIEW —



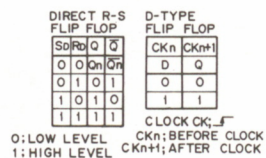
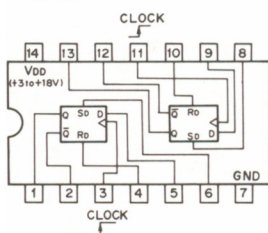
TC4069UBP (TOSHIBA)
C-MOS INVERTER
— TOP VIEW —



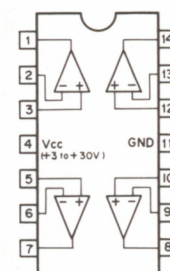
TC40H00P (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —



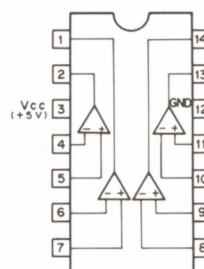
TC504013BP (TOSHIBA)
HD14013BP (HITACHI)
MB84013B (FUJITSU)
C-MOS D-TYPE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



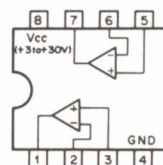
uPC324C (NEC)
QUAD. OP. AMPLIFIER
— TOP VIEW —



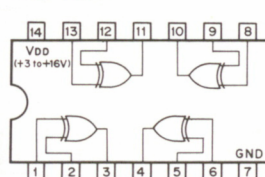
uPC339C (NEC)
COMPARATOR
— TOP VIEW —



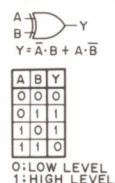
uPC358C (NEC)
DUAL OPERATIONAL AMPLIFIERS
— TOP VIEW —

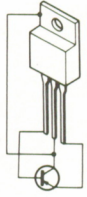


uPD4030BC (NEC)
C-MOS EXCLUSIVE OR GATE
— TOP VIEW —



CD4030AE/BE





2SA768
2SA771



2SA1048
2SA1115
2SA933S



2SA1175
2SA1175F



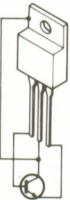
2SB733



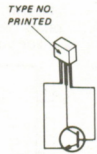
2SC1740
2SC2878
2SC3068



2SC1740S
2SC2458
2SC403SP
2SC2603F



2SC1826



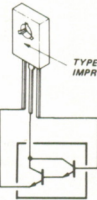
TYPE NO.
PRINTED
2SC2785E
2SC2785F



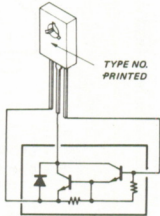
2SD774



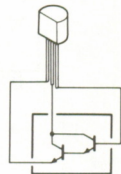
2SD789



2SD894



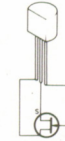
2SD998



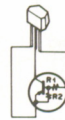
2SD1111



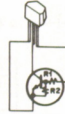
2SD1682



2SK152
2SK523



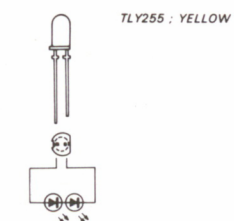
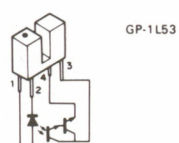
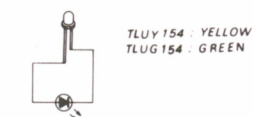
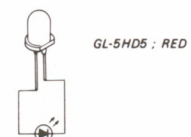
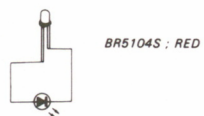
DTA124XS (R1=22K, R2=47K)



DTC124XS (R1=22K, R2=47K)
DTC144ES (R1=47K, R2=47K)



SPS102



SECTION 14
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

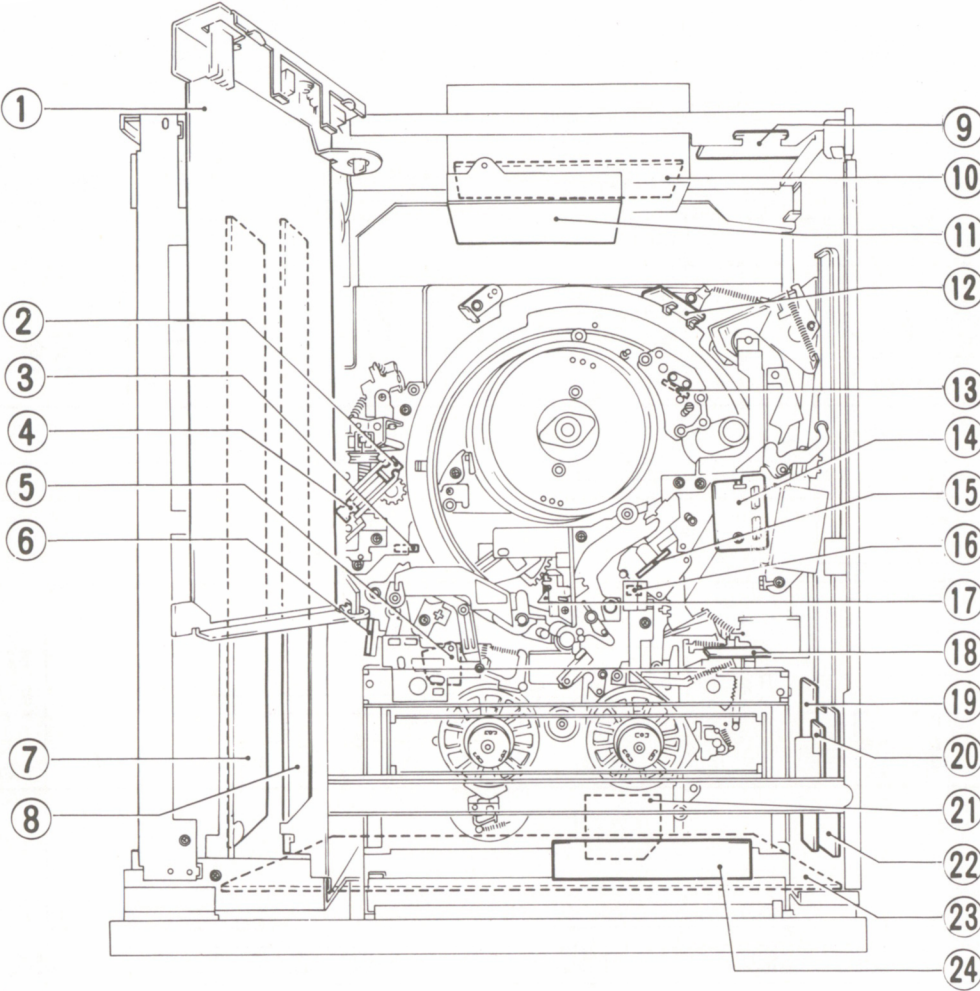
CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARD

Circuit information is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VA-57	Video Demodulator
AUDIO	DUS-92	Audio CTL Head
	DUS-147	Audio CTL Head
	VA-57	Audio PB Amplifier
SERVO	EC-28	CTL Head
	DUS-92	Audio CTL Head
	DUS-147	Audio CTL Head
	PT-9	Reel Motor Driver
	SV-93B	Servo System
POWER	AC-65	AC Input
	DC-31B	DC Supply
	UR-14	Switching Regulator
KEY	KY-105B	Function Key/Display
SYSTEM CONTROL	IF-132	33P Interface
	PD-40A	Plunger Solenoids
	PD-41	Plunger Solenoids
	PH-5	Tape Beginning/End Sensor
	SY-106B	System Control
OTHERS	CC-31	Cassette-up Compartment
	CC-32	Cassette In Detector
	CC-33	Cassette Down Detector
	LM-13	Threading Motor
	LP-41	Cassette Compartment Light
	PTC-33	Threadend/Unthreadend Detector
	PTC-34	FR/Unthreadend Detector
	PTC-35	S/T Reel Rotation Detector
	RM-39	Reel Motor
	SE-46	Tension Regulator Detector
	TG-22	Tension Regulator LED

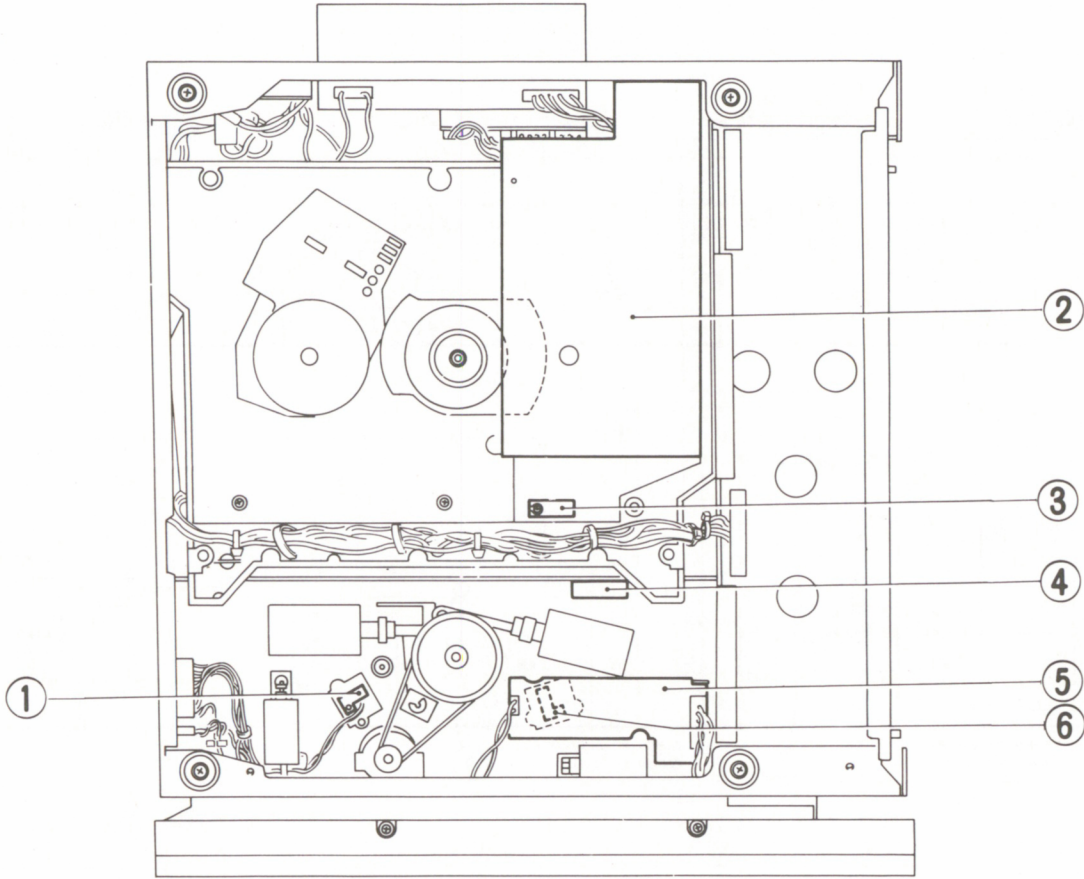
LOCATION OF THE PRINTED CIRCUIT BOARD

〈TOP VIEW〉



- | | |
|-----------------|------------------|
| 1 VA-57 Board | 13 DUS-92 Board |
| 2 PH-5 Board | 14 DUS-147 Board |
| 3 LM-13 Board | 15 EC-28 Board |
| 4 PH-5 Board | 16 PH-5 Board |
| 5 SE-46 Board | 17 PH-5 Board |
| 6 PTC-34 Board | 18 CC-33 Board |
| 7 SV-93B Board | 19 CC-32 Board |
| 8 SY-106B Board | 20 CC-31 Board |
| 9 AC-65 Board | 21 RM-39 Board |
| 10 UR-14 Board | 22 PD-40A Board |
| 11 DC-31B Board | 23 KY-105B Board |
| 12 PTC-33 Board | 24 LP-41 Board |

〈BOTTOM VIEW〉

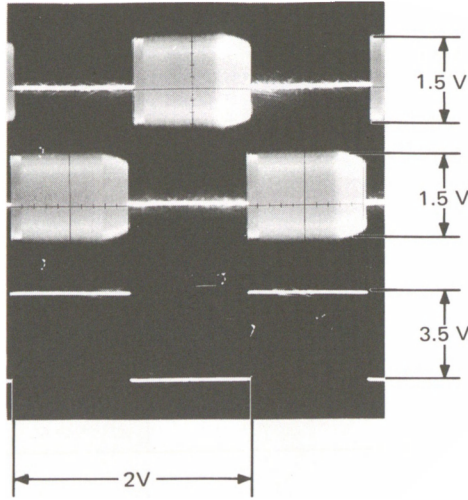


- | |
|----------------|
| 1 PTC-35 Board |
| 2 IF-132 Board |
| 3 PT-9 Board |
| 4 TG-22 Board |
| 5 PD-41 Board |
| 6 PTC-35 Board |

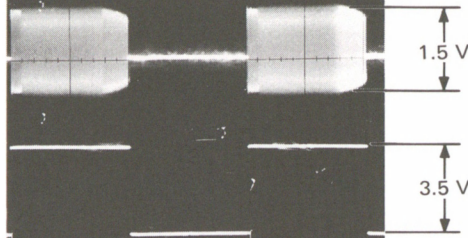
1-622-394-11
VP-7000



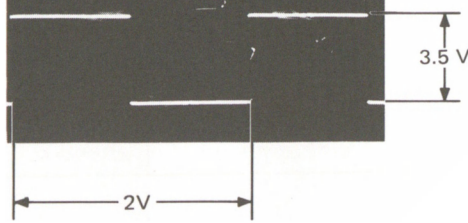
① IC1-16



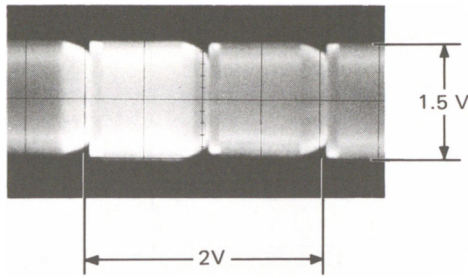
② IC1-17



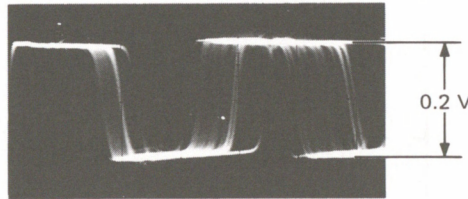
③ TP2



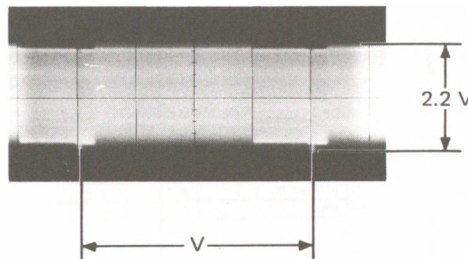
④ TP1



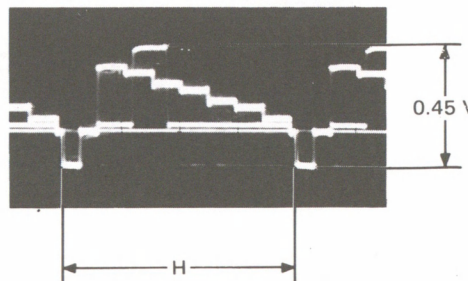
⑤ IC2-1



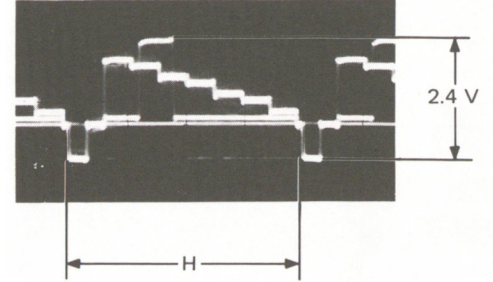
⑥ IC2-21



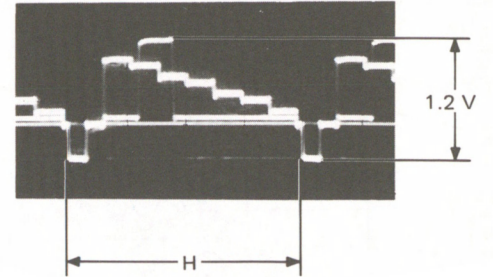
⑦ TP4



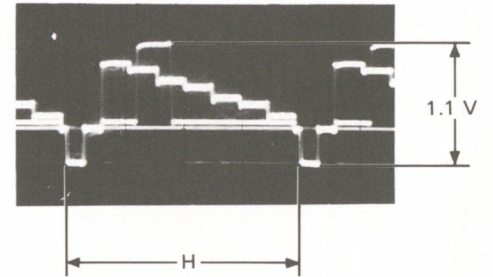
⑧ IC2-4



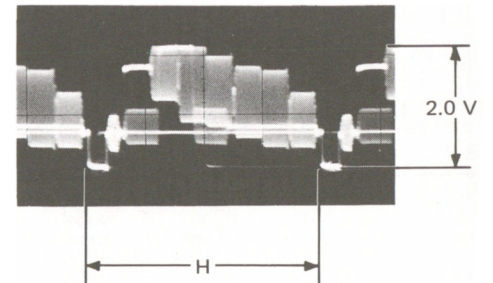
⑨ TP5



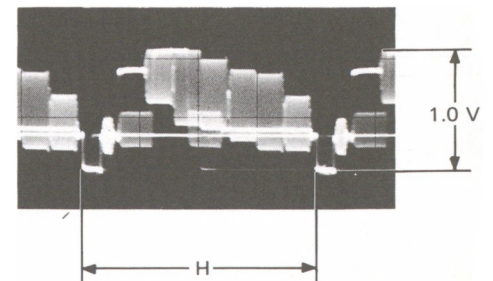
⑩ IC2-14



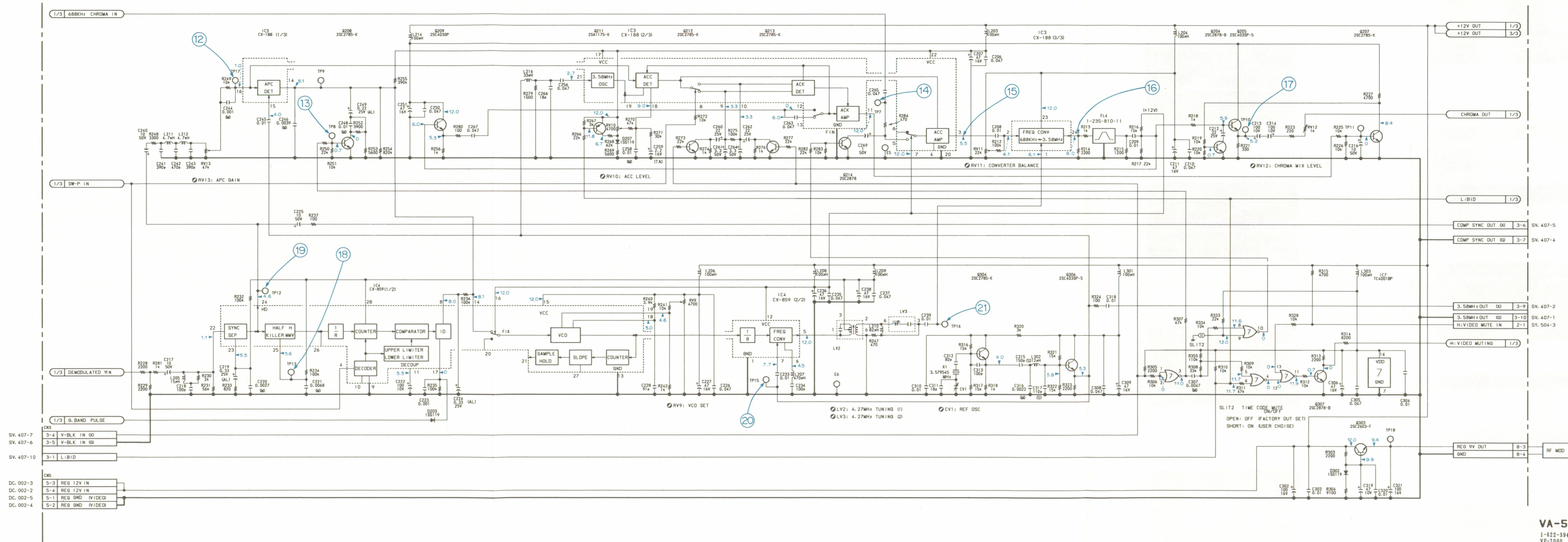
⑪ Q108-C

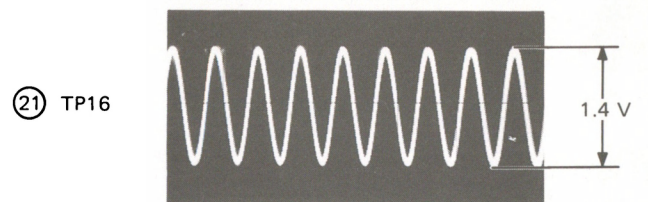
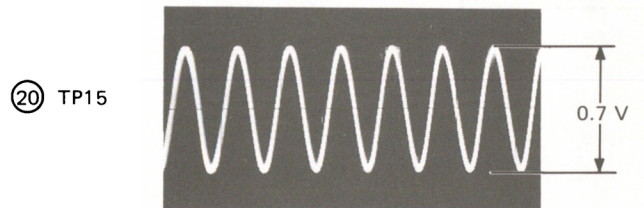
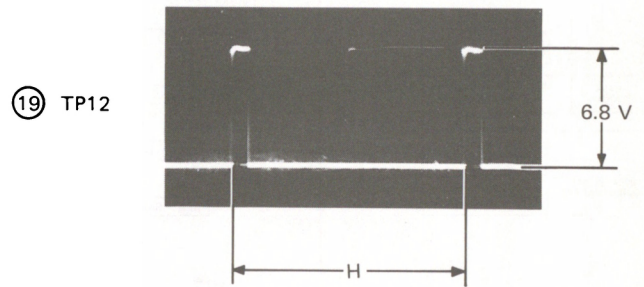
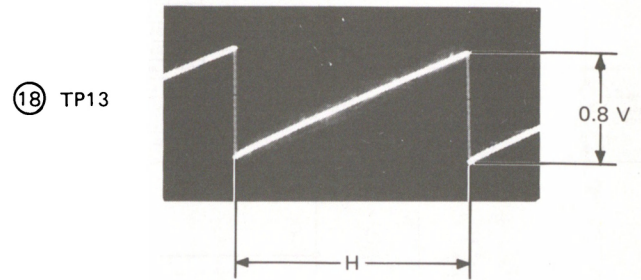
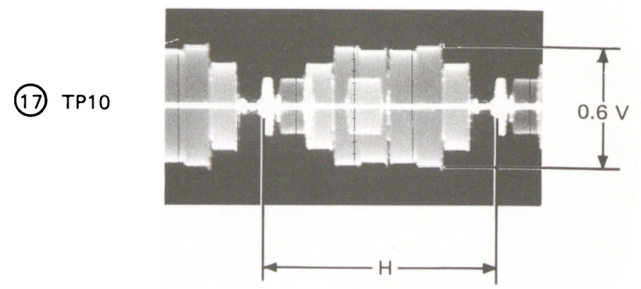
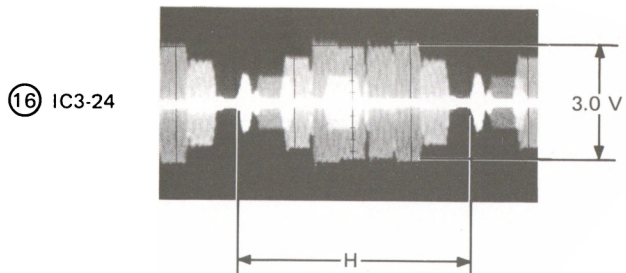
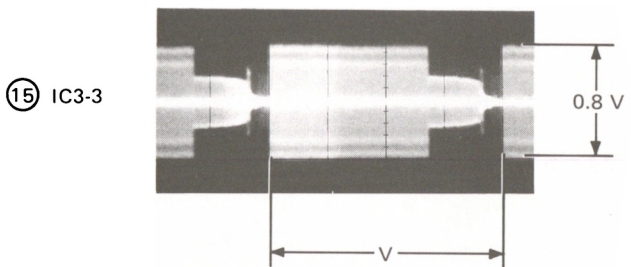
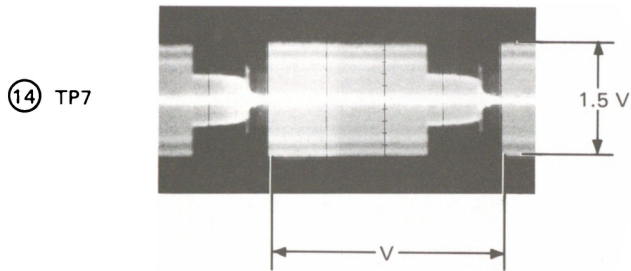
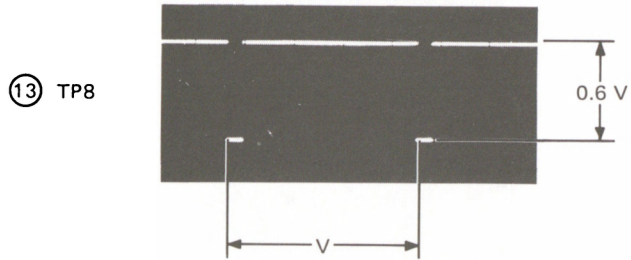
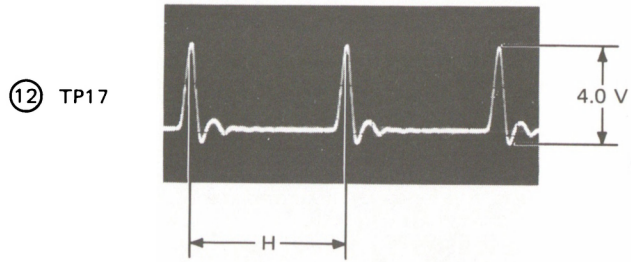


⑫ TP6

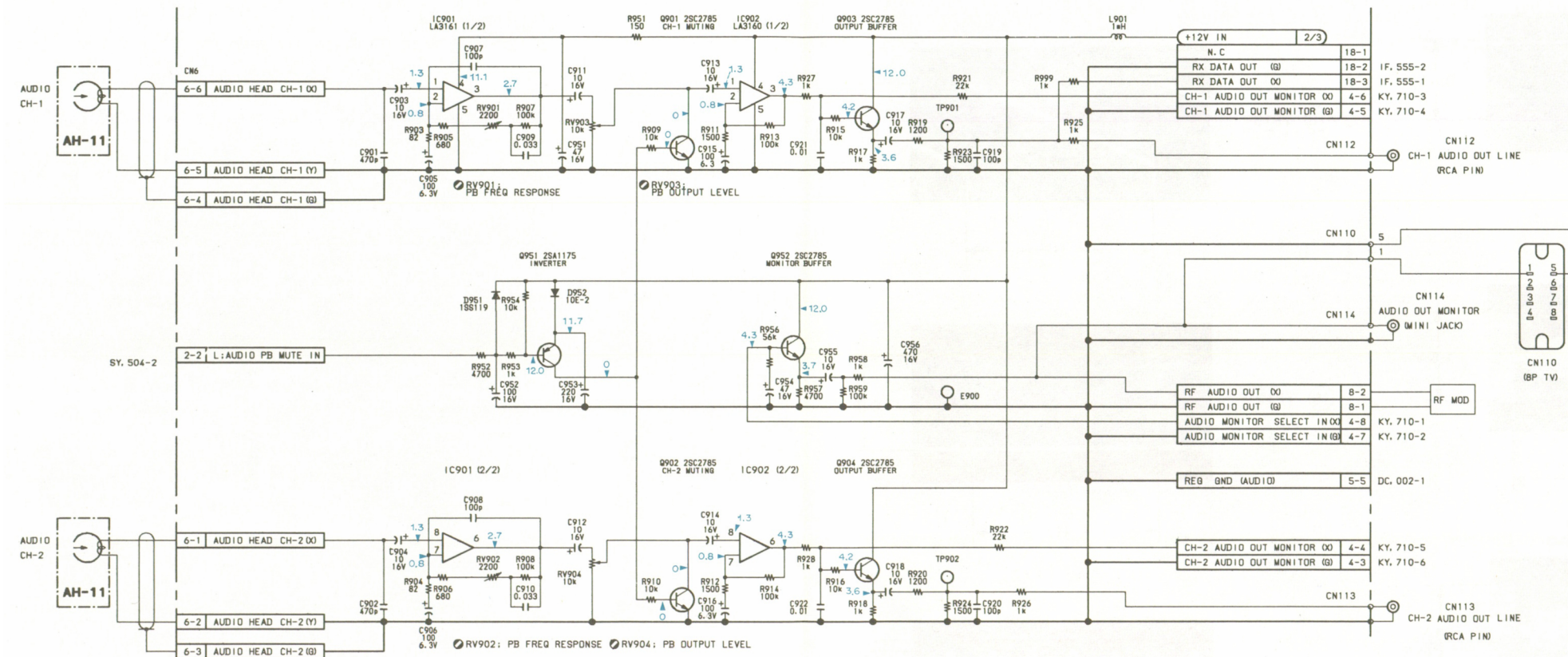


VA-57(2/3):VIDEO/AUDIO PB





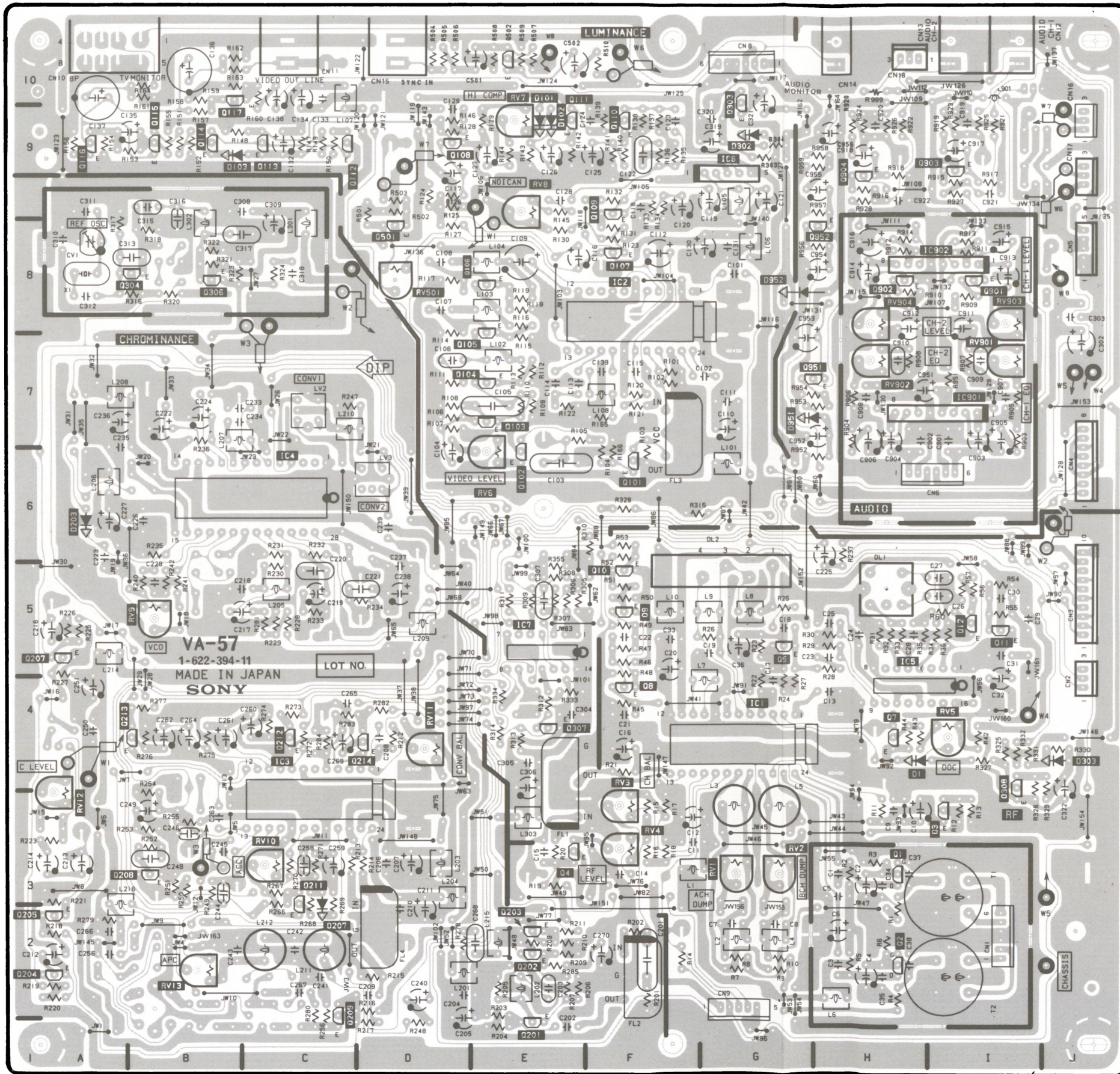
VA-57(3/3):VIDEO/AUDIO PB



VA-57:VIDEO/AUDIO PB

VA-57 (1-622-394-11)

CN1	I-2	Q11	I-5	RV12	A-3
CN2	J-4	Q12	I-5	RV501	D-8
CN4	J-6	Q101	F-6	RV902	H-7
CN5	J-8	Q102	E-6	RV903	I-8
CN6	I-6	Q103	E-7	RV904	H-8
CN8	G-10	Q104	E-7		
CN9	G-2	Q105	E-7	X1	A-8
CN10	A-10	Q106	E-8		
CN11	C-10	Q107	F-8		
CN12	I-10	Q108	D-9		
CN13	I-10	Q109	F-9		
CN14	H-10	Q110	F-9		
CN15	D-10	Q111	E-9		
CN17	J-9	Q112	C-9		
CN18	H-10	Q113	C-9		
		Q114	B-9		
D1	H-4	Q115	B-9		
D101	E-9	Q116	A-9		
D102	E-9	Q117	B-10		
D103	C-9	Q201	E-1		
D203	A-6	Q202	E-2		
D207	C-2	Q203	E-2		
D302	G-9	Q204	A-2		
D303	J-4	Q205	A-2		
D951	H-7	Q207	A-5		
D952	G-8	Q208	B-3		
		Q209	C-2		
FL1	E-1	Q211	C-3		
FL2	F-2	Q212	C-4		
FL3	F-7	Q213	B-4		
FL4	D-2	Q214	D-4		
		Q303	G-9		
IC1	G-4	Q306	B-8		
IC2	F-8	Q308	B-8		
IC3	C-3	Q501	D-8		
IC4	C-6	Q502	E-10		
IC5	H-4	Q901	I-8		
IC6	G-9	Q902	H-8		
IC7	E-5	Q903	I-9		
IC901	I-7	Q904	H-9		
IC902	I-8	Q951	H-7		
		Q952	H-8		
LV2	C-7	RV1	G-3		
LV3	D-6	RV2	G-3		
		RV3	F-3		
Q1	H-3	RV4	F-3		
Q2	H-2	RV5	I-4		
Q3	I-3	RV6	E-6		
Q4	E-3	RV7	E-9		
Q5	G-5	RV8	E-9		
Q7	H-4	RV9	B-5		
Q8	F-4	RV10	C-3		
Q9	F-5	RV11	D-4		
Q10	F-5				



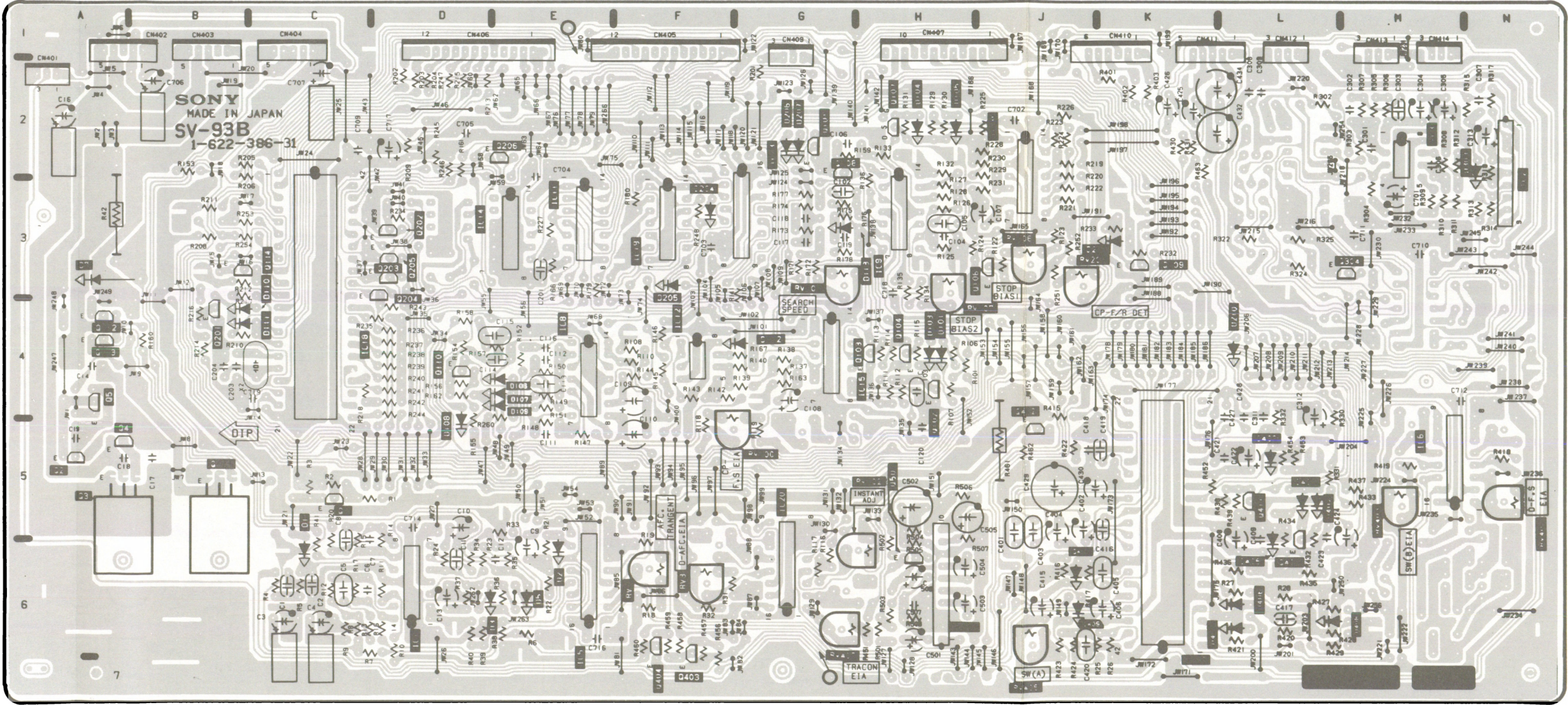
VA-57
-COMPONENT SIDE-
1-622-394-11
VP-7000

SV-93B:SERVO SYSTEM

UC;S/N 10001 thru 11400
J; S/N 10001 thru 10200

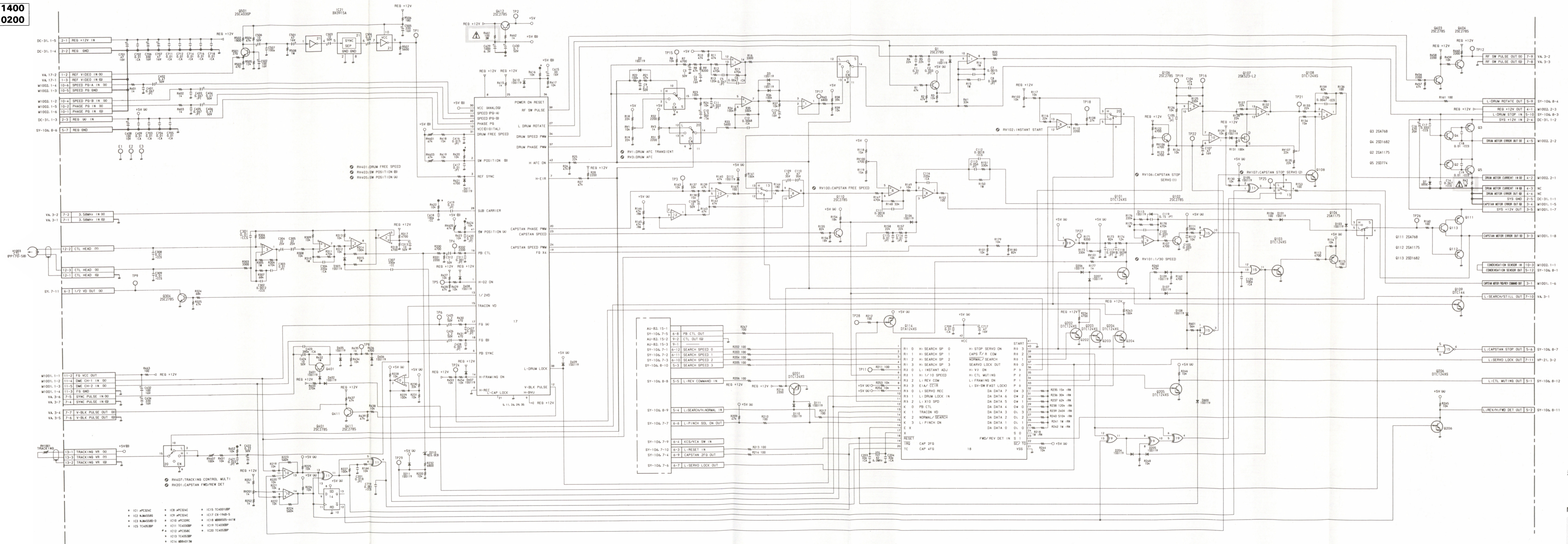
SV-93B (1-622-386-31)

CN401 A-2	IC9	H-3	RV403 M-5
CN402 A-1	IC10	J-2	RV405 J-6
CN403 B-1	IC11	E-3	RV407 G-6
CN404 C-1	IC12	F-4	
CN405 F-1	IC13	G-3	X2 C-4
CN406 D-1	IC14	E-3	
CN407 H-1	IC15	G-4	
CN409 G-1	IC17	K-5	
CN410 K-1	IC18	C-3	
CN411 K-1	IC19	F-3	
CN412 L-1	IC20	G-6	
CN413 M-1	IC21	H-6	
CN414 M-1			
D1 C-6	Q1 C-5		
D2 E-6	Q3 A-5		
D3 E-6	Q4 A-5		
D5 E-6	Q5 A-4		
D7 A-3	Q101 G-2		
D101 H-4	Q102 H-4		
D103 H-4	Q103 H-4		
D104 H-2	Q104 H-4		
D105 H-2	Q106 J-3		
D106 E-4	Q107 H-2		
D107 E-4	Q108 G-2		
D108 D-5	Q109 K-3		
D109 E-4	Q110 D-4		
D110 B-4	Q111 B-5		
D111 B-4	Q112 A-4		
D112 G-4	Q113 A-4		
D113 G-3	Q114 B-3		
D204 F-3	Q201 B-4		
D205 F-3	Q202 D-3		
D206 G-2	Q203 D-3		
D207 G-2	Q204 D-3		
D210 L-4	Q205 D-3		
D211 K-3	Q206 E-2		
D303 N-2	Q304 M-3		
D401 L-5	Q401 L-5		
D402 L-5	Q403 F-6		
D405 L-5	Q404 F-6		
D406 L-6	Q411 L-5		
D407 L-5	Q412 J-5		
D408 L-6	Q501 H-6		
D409 J-6			
D410 J-6	RV1 F-6		
D411 L-6	RV3 F-6		
	RV100 F-5		
IC1 D-6	RV101 G-3		
IC2 N-2	RV102 H-6		
IC3 M-2	RV106 J-3		
IC5 E-6	RV107 H-3		
IC6 M-5	RV201 J-3		
IC8 E-4	RV401 N-5		



SV-93B
-COMPONENT SIDE-
1-622-386-31
VP-7000

UC;S/N 10001 thru 11400
J; S/N 10001 thru 10200



注意:  印及び  で囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

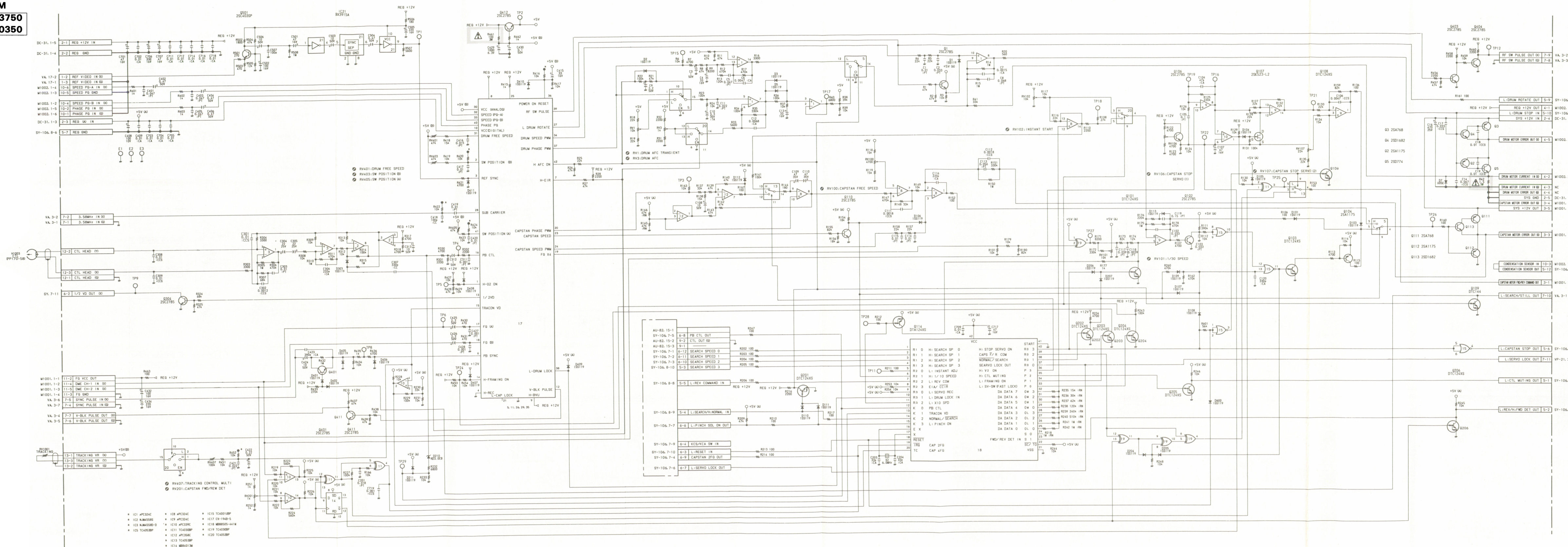
NOTE;

The shaded and -marked components are critical to safety.
Replace only with same components as specified.

SV-93B:SERVO SYSTEM
UC:S/N 11401 thru 13750
J: S/N 10201 thru 10350

SV-93B **SV-93B**

SV-93B **SV-93B**



注意: △印及び で囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

NOTE:
 The shaded and △ marked components are critical to safety.
 Replace only with same components as specified.

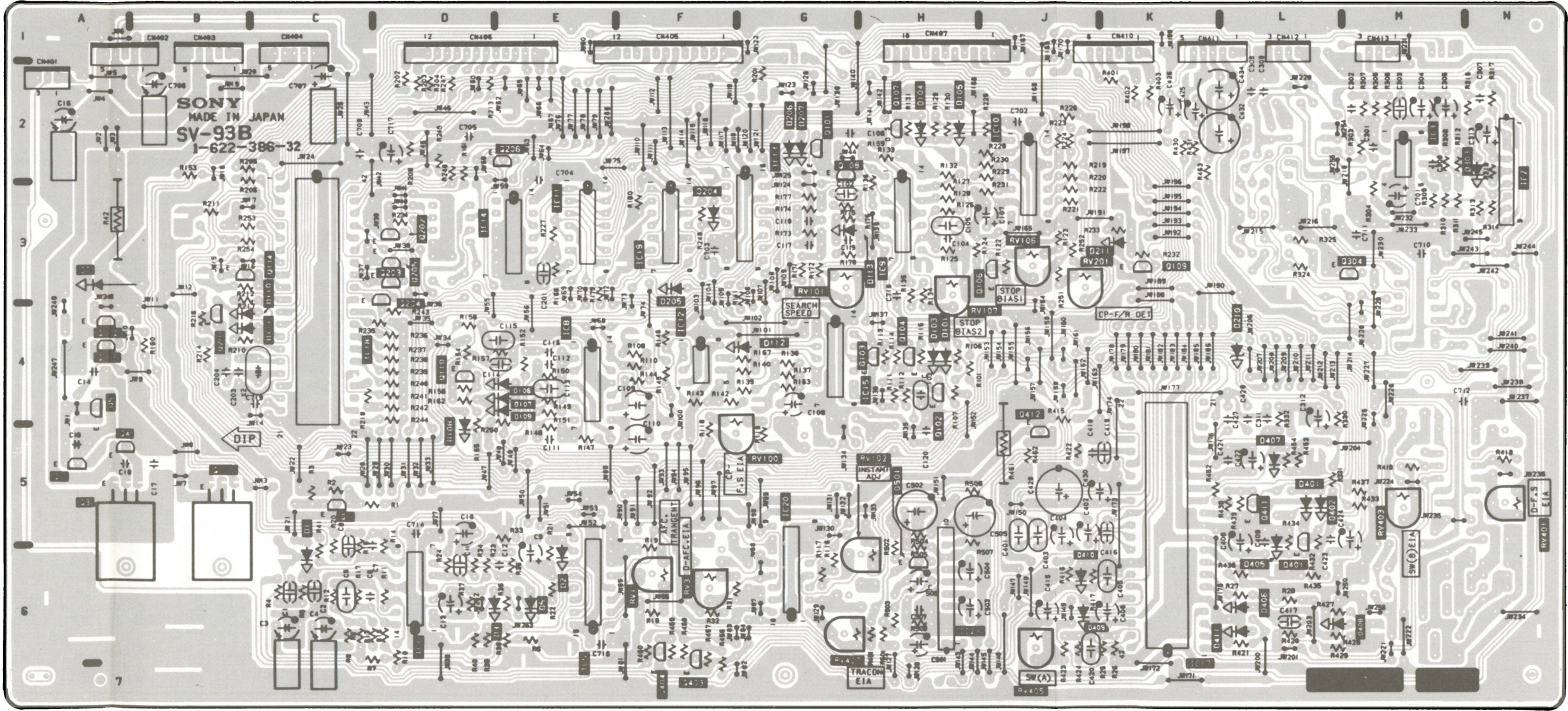
SV-93B
 1-822-586-92
 VP-7000

SV-93B:SERVO SYSTEM

UC;S/N 11401 thru 13750
J; S/N 10201 thru 10350

SV-93B (1-622-386-32)

CN401 A-2	IC12 F-4	X2	C-4
CN402 A-1	IC13 G-3		
CN403 B-1	IC14 E-3		
CN404 C-1	IC15 G-4		
CN405 F-1	IC17 K-5		
CN406 D-1	IC18 C-3		
CN407 H-1	IC19 F-3		
CN410 K-1	IC20 G-6		
CN411 K-1	IC21 H-6		
CN412 L-1			
CN413 M-1	Q1 C-5		
	Q2 A-5		
D1 C-6	Q3 A-5		
D2 E-6	Q4 A-5		
D3 E-6	Q5 A-4		
D5 E-6	Q101 G-2		
D7 A-3	Q102 H-4		
D101 H-4	Q103 H-4		
D103 H-4	Q104 H-4		
D104 H-2	Q106 J-3		
D105 H-2	Q107 H-2		
D106 E-4	Q108 G-2		
D107 E-4	Q109 K-3		
D108 D-5	Q110 D-4		
D109 E-4	Q111 B-5		
D110 B-4	Q112 A-4		
D111 B-4	Q113 A-4		
D112 G-4	Q114 B-3		
D113 G-3	Q201 B-4		
D204 F-3	Q202 D-3		
D205 F-3	Q203 D-3		
D206 G-2	Q204 D-3		
D207 G-2	Q205 D-3		
D210 L-4	Q206 E-2		
D211 K-3	Q304 M-3		
D303 N-2	Q401 L-5		
D401 L-5	Q403 F-6		
D402 L-5	Q404 F-6		
D405 L-5	Q411 L-5		
D406 L-6	Q412 J-5		
D407 L-5	Q501 H-6		
D408 L-6			
D409 J-6	RV1 F-6		
D410 J-6	RV3 F-6		
D411 L-6	RV100 F-5		
	RV101 G-3		
IC1 D-6	RV102 H-6		
IC2 N-2	RV106 J-3		
IC3 M-2	RV107 H-3		
IC5 E-6	RV201 J-3		
IC8 E-4	RV401 N-5		
IC9 H-3	RV403 M-5		
IC10 J-2	RV405 J-6		
IC11 E-3	RV407 G-6		

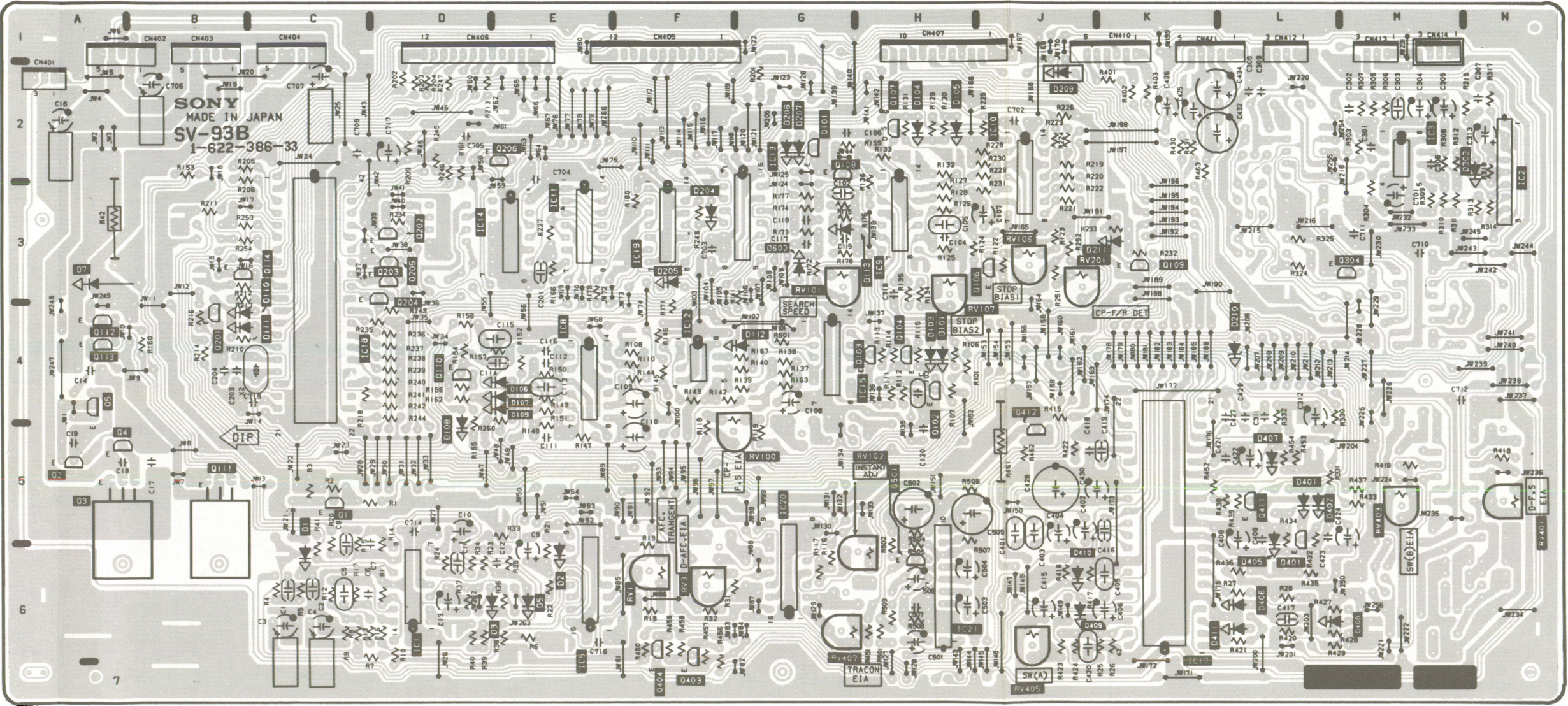


SV-93B
-COMPONENT SIDE-
1-622-386-32
VP-7000

SV-93B:SERVO SYSTEM
UC: S/N 13751 and higher
J; S/N 10351 and higher

SV-93B (1-622-386-33)

CN401 A-2	IC9	H-3	RV403 M-5
CN402 A-1	IC10	J-2	RV405 J-6
CN403 B-1	IC11	E-3	RV407 G-6
CN404 C-1	IC12	F-4	
CN405 F-1	IC13	G-3	X2 C-4
CN406 D-1	IC14	E-3	
CN407 H-1	IC15	G-4	
CN410 K-1	IC17	K-5	
CN411 K-1	IC18	C-3	
CN412 L-1	IC19	F-3	
CN413 M-1	IC20	G-6	
CN414 M-1	IC21	H-6	
D1 C-6	Q1 C-5		
D2 E-6	Q2 A-5		
D3 E-6	Q3 A-5		
D5 E-6	Q4 A-5		
D7 A-3	Q5 A-4		
D101 H-4	Q101 G-2		
D103 H-4	Q102 H-4		
D104 H-2	Q103 H-4		
D105 H-2	Q104 H-4		
D106 E-4	Q106 J-3		
D107 E-4	Q107 H-2		
D108 D-5	Q108 G-2		
D109 E-4	Q109 K-3		
D110 B-4	Q110 D-4		
D111 B-4	Q111 B-5		
D112 G-4	Q112 A-4		
D113 G-3	Q113 A-4		
D204 F-3	Q114 B-3		
D205 F-3	Q201 B-4		
D206 G-2	Q202 D-3		
D207 G-2	Q203 D-3		
D208 J-2	Q204 D-3		
D210 L-4	Q205 D-3		
D211 K-3	Q206 E-2		
D303 N-2	Q304 M-3		
D401 L-5	Q401 L-5		
D402 L-5	Q403 F-6		
D405 L-5	Q404 F-6		
D406 L-6	Q411 L-5		
D407 L-5	Q412 J-5		
D408 L-6	Q501 H-6		
D409 J-6			
D410 J-6	RV1 F-6		
D411 L-6	RV3 F-6		
D600 G-3	RV100 F-5		
	RV101 G-3		
IC1 D-6	RV102 H-6		
IC2 N-2	RV106 J-3		
IC3 M-2	RV107 H-3		
IC5 E-6	RV201 J-3		
IC8 E-4	RV401 N-5		



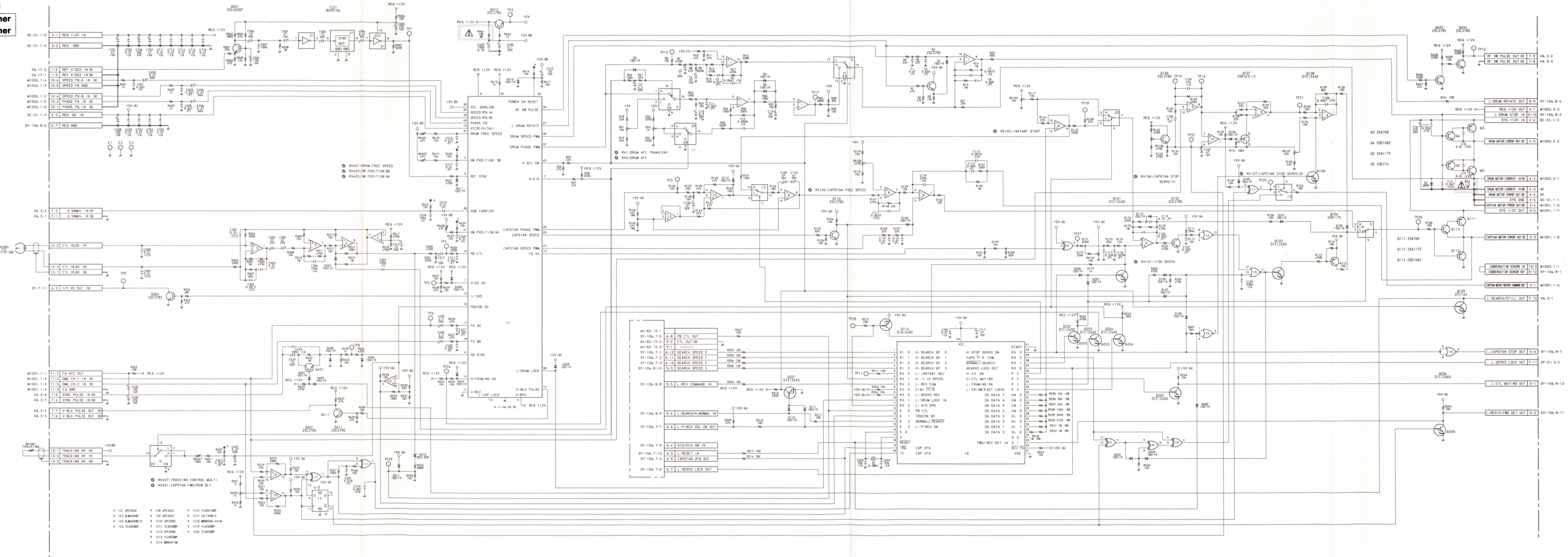
SV-93B

-COMPONENT SIDE-
1-622-386-33
VP-7000

SV-93B:SERVO SYSTEM
UC;S/N 13751 and higher
J; S/N 10351 and higher

SV-93B SV-93B

SV-93B SV-93B

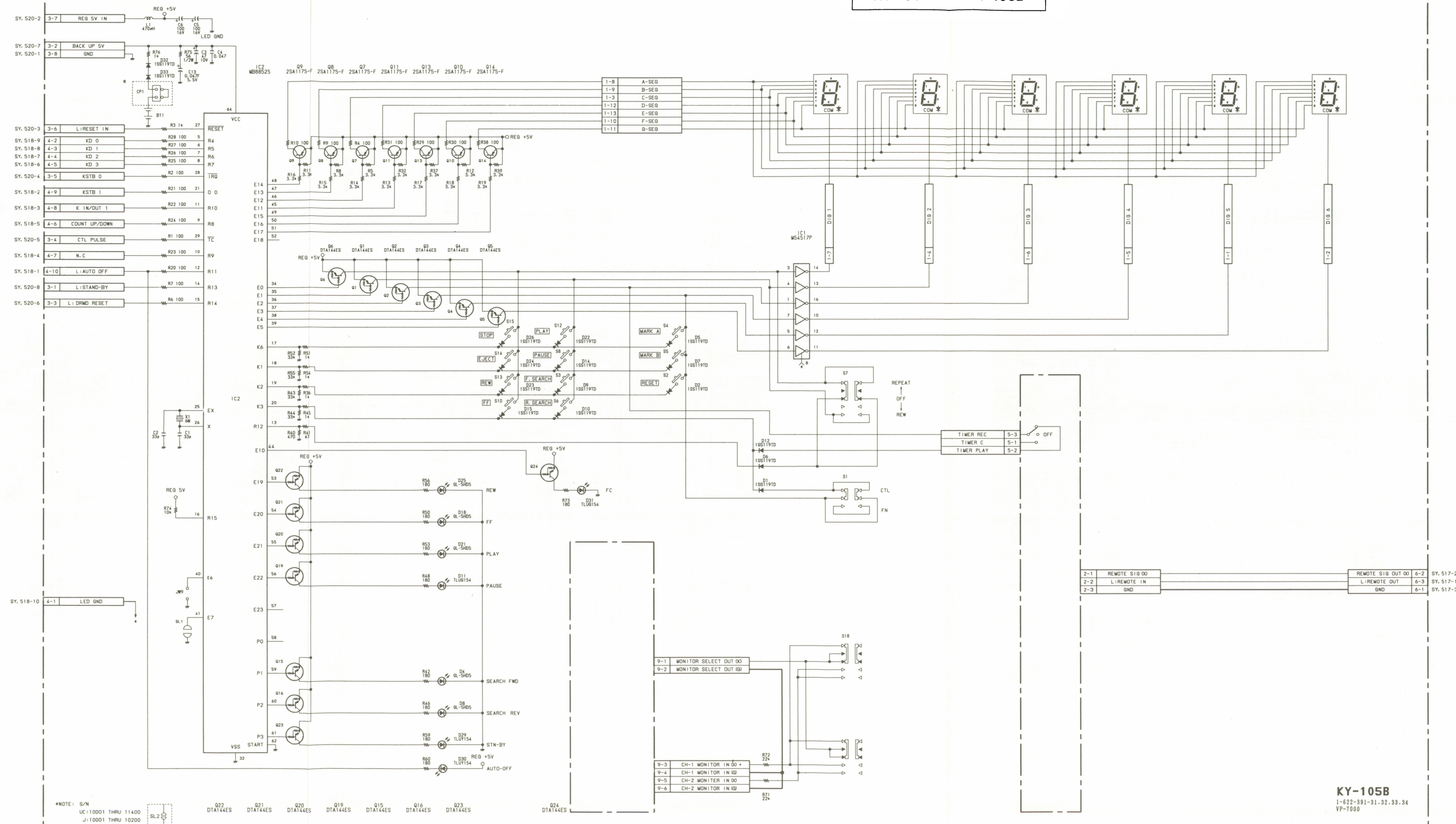


注意: △印及びで囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

NOTE:
 The shaded and △-marked components are critical to safety.
 Replace only with same components as specified.

SV-93B
 1-622-986-33
 VP-7000

J; S/N 10001 and higher



KY-105B:FUNCTION KEY/DISPLAY

UC;S/N 10001 thru 10500

J; S/N 10001 thru 10100

KY-105B (1-622-391-31)

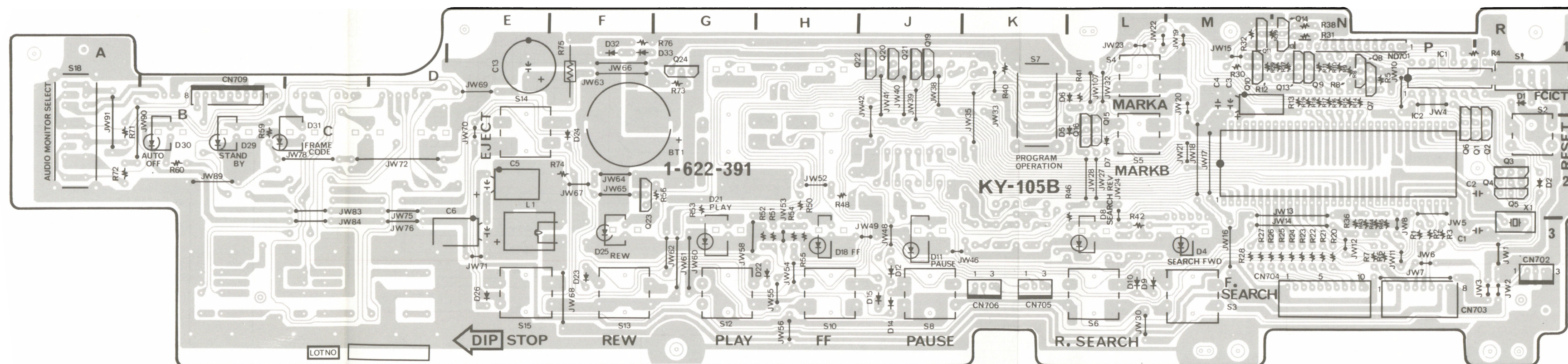
BT1	F-2	Q19	J-1
		Q20	J-1
CN702	R-3	Q21	J-1
CN703	P-3	Q22	J-1
CN704	N-3	Q23	F-2
CN705	K-3	Q24	G-1
CN706	K-3		
CN709	B-1	S1	R-1

D1	R-1	S3	M-3
D2	R-2	S4	L-1
D4	M-3	S5	L-2
D5	L-2	S6	L-3
D6	L-1	S7	K-1
D7	L-2	S8	J-3
D8	L-3	S10	H-3
D9	L-3	S12	G-3
D10	L-3	S13	F-3
D11	J-3	S14	E-2
D12	J-3	S15	E-3
D14	J-3	S18	A-2

X1 R-3

IC1	P-1
IC2	N-2

Q1	R-2
Q2	R-2
Q3	R-2
Q4	R-2
Q5	R-2
Q6	P-2
Q7	N-1
Q8	N-1
Q9	N-1
Q10	M-1
Q11	M-1
Q13	N-1
Q14	N-1
Q15	L-2
Q16	L-2



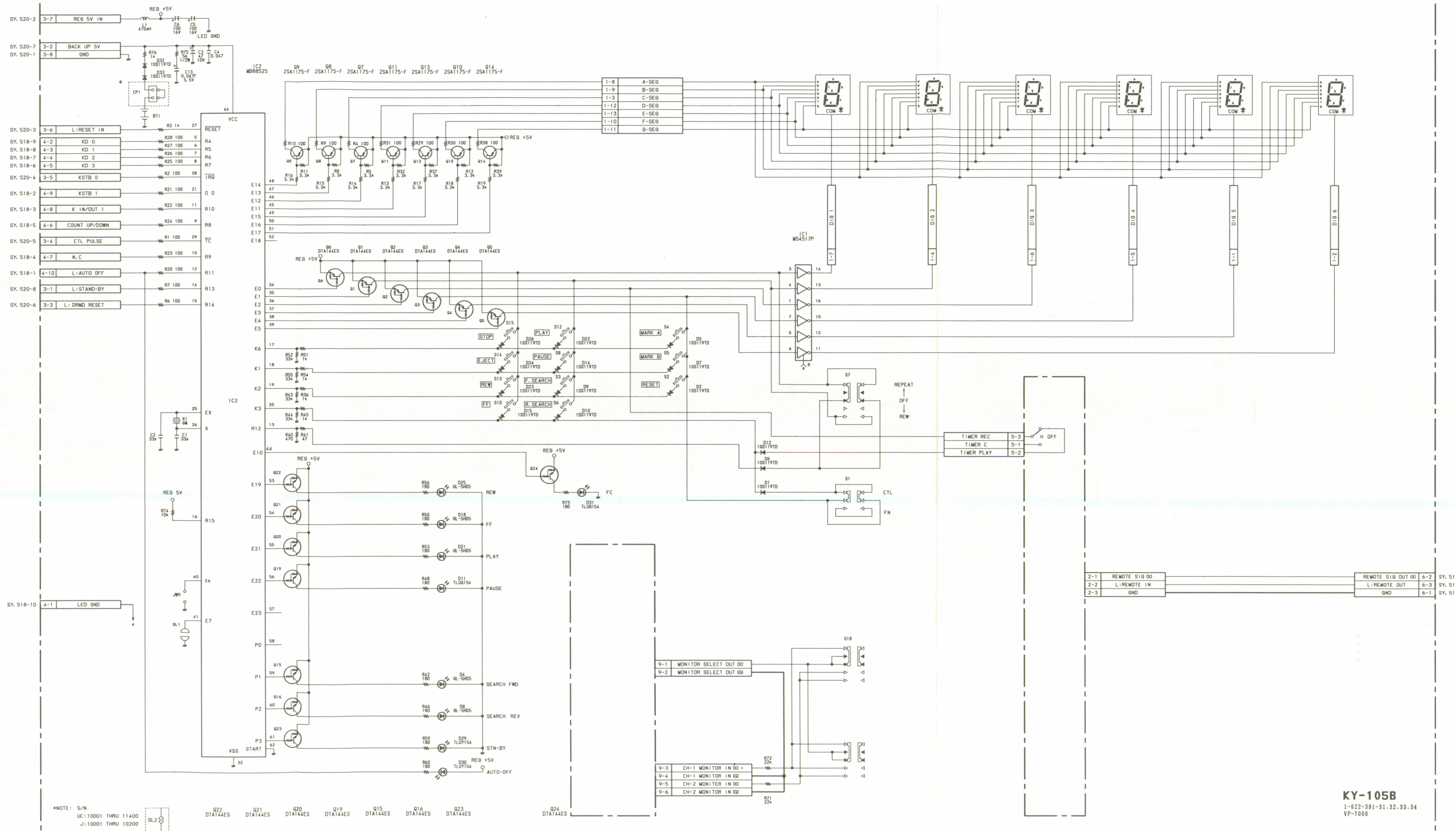
KY-105B

-COMPONENT SIDE-

1-622-391-31
VP-7000

KY-105B:FUNCTION KEY/DISPLAY

UC:S/N 10001 and higher
J; S/N 10001 and higher

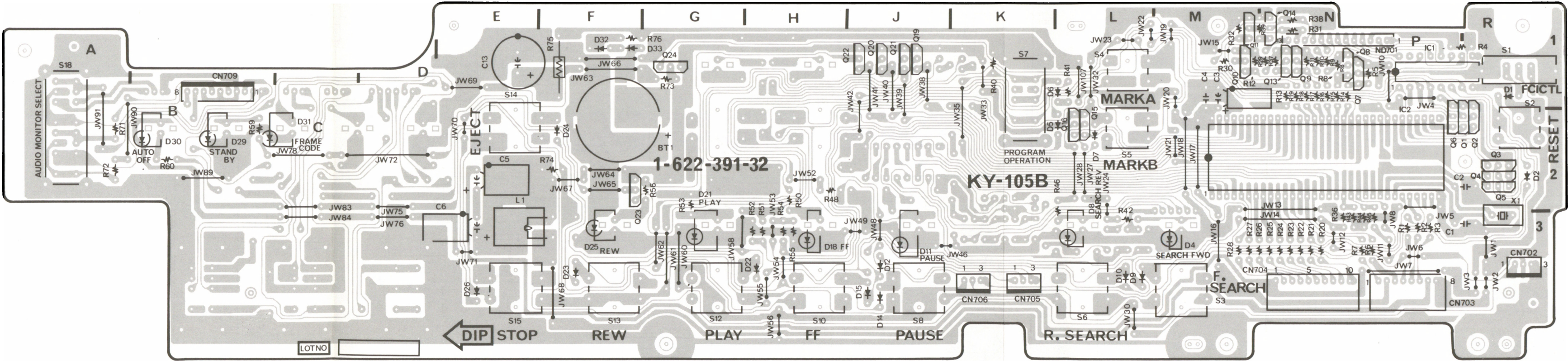


KY-105B:FUNCTION KEY/DISPLAY

UC;S/N 10501 thru 11400
J; S/N 10101 thru 10200

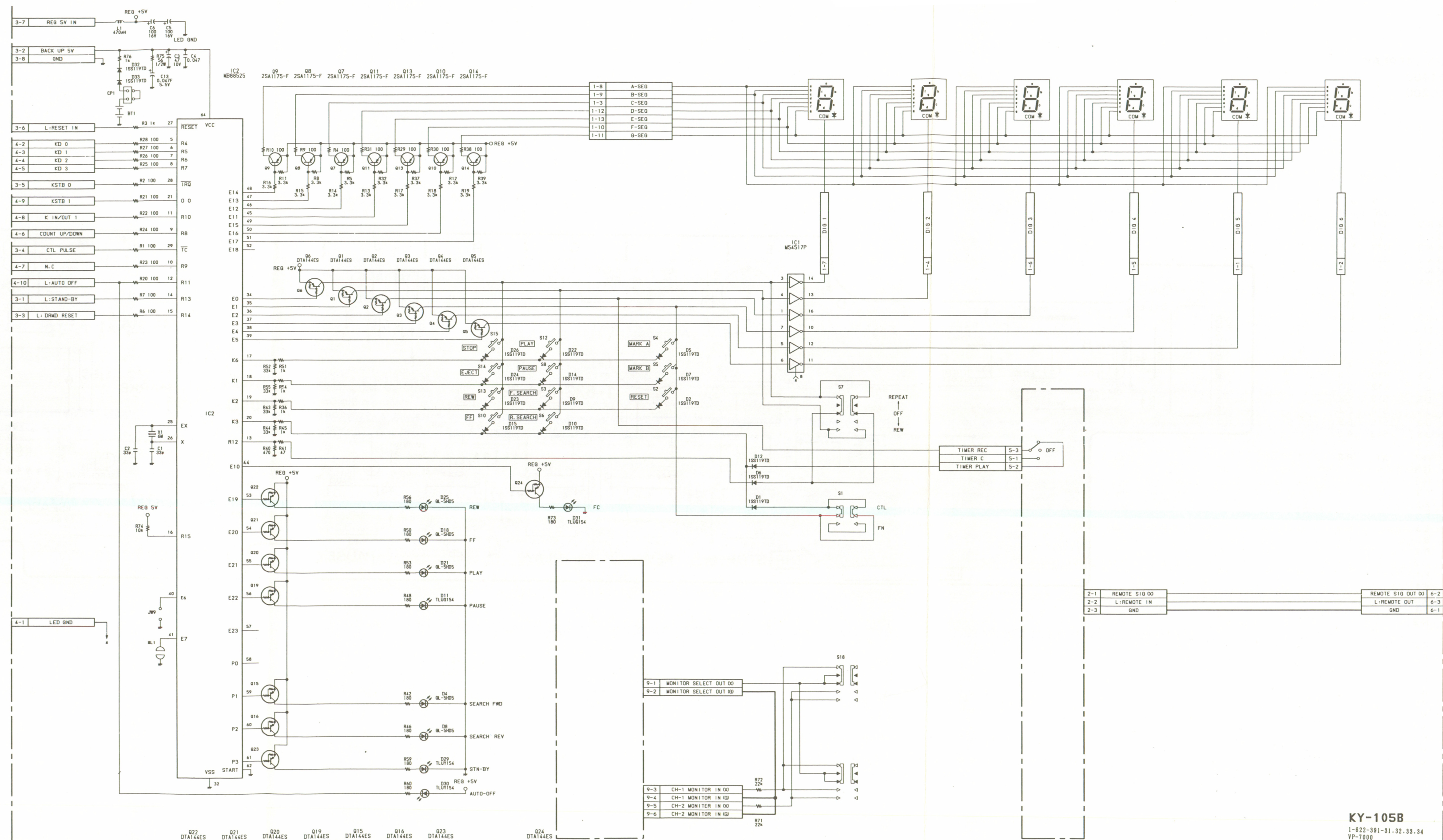
KY-105B (1-622-391-32)

BT1	F-2	Q19	J-1
		Q20	J-1
CN702	R-3	Q21	J-1
CN703	P-3	Q22	J-1
CN704	N-3	Q23	F-2
CN705	K-3	Q24	G-1
CN706	K-3		
CN709	B-1	S1	R-1
		S2	R-2
D1	R-1	S3	M-3
D2	R-2	S4	L-1
D4	M-3	S5	L-2
D5	L-2	S6	L-3
D6	L-1	S7	K-1
D7	L-2	S8	J-3
D8	L-3	S10	H-3
D9	L-3	S12	G-3
D10	L-3	S13	F-3
D11	J-3	S14	E-2
D12	J-3	S15	E-3
D14	J-3	S18	A-2
D15	J-3		
D18	H-3	X1	R-3
D21	G-3		
D22	H-3		
D23	F-3		
D24	F-2		
D25	F-3		
D26	E-3		
D29	B-2		
D30	B-2		
D31	C-2		
D32	F-1		
D33	F-1		
IC1	P-1		
IC2	N-2		
Q1	R-2		
Q2	R-2		
Q3	R-2		
Q4	R-2		
Q5	R-2		
Q6	P-2		
Q7	N-1		
Q8	N-1		
Q9	N-1		
Q10	M-1		
Q11	M-1		
Q13	N-1		
Q14	N-1		
Q15	L-2		
Q16	L-2		



KY-105B
-COMPONENT SIDE-
1-622-391-32
VP-1000

UC;S/N 10001 and higher
J; S/N 10001 and higher

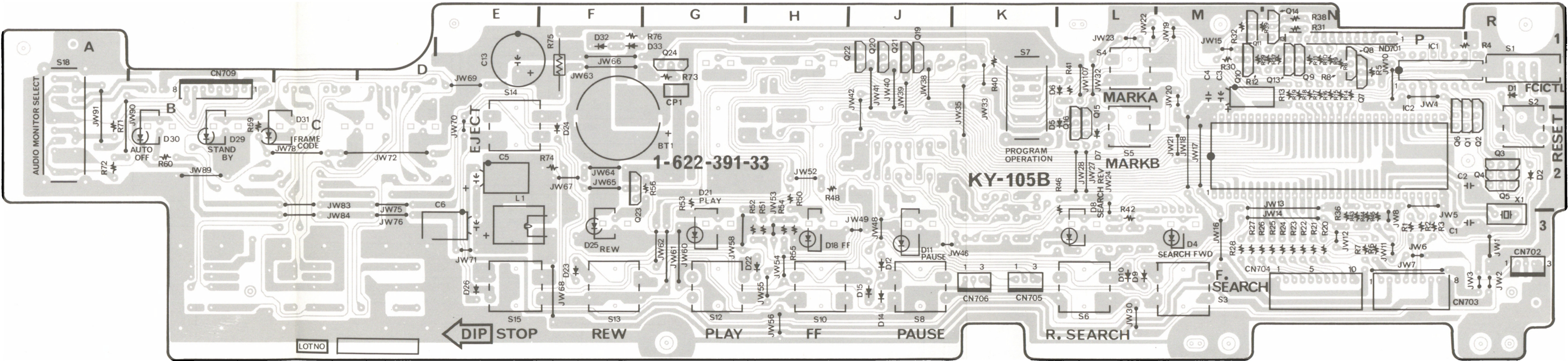


KY-105B:FUNCTION KEY/DISPLAY

UC;S/N 11401 thru 12900
J; S/N 10201 thru 10300

KY-105B (1-622-391-33)

BT1	F-2	Q15	L-2
		Q16	L-2
CN702	R-3	Q19	J-1
CN703	P-3	Q20	J-1
CN704	N-3	Q21	J-1
CN705	K-3	Q22	J-1
CN706	K-3	Q23	F-2
CN709	B-1	Q24	G-1
CP1	G-1	S1	R-1
		S2	R-2
D1	R-1	S3	M-3
D2	R-2	S4	L-1
D4	M-3	S5	L-2
D5	L-2	S6	L-3
D6	L-1	S7	K-1
D7	L-2	S8	J-3
D8	L-3	S10	H-3
D9	L-3	S12	G-3
D10	L-3	S13	F-3
D11	J-3	S14	E-2
D12	J-3	S15	E-3
D14	J-3	S18	A-2
D15	J-3		
D18	H-3	X1	R-3
D21	G-3		
D22	H-3		
D23	F-3		
D24	F-2		
D25	F-3		
D26	E-3		
D29	B-2		
D30	B-2		
D31	C-2		
D32	F-1		
D33	F-1		
IC1	P-1		
IC2	N-2		
Q1	R-2		
Q2	R-2		
Q3	R-2		
Q4	R-2		
Q5	R-2		
Q6	P-2		
Q7	N-1		
Q8	N-1		
Q9	N-1		
Q10	M-1		
Q11	M-1		
Q13	N-1		
Q14	N-1		

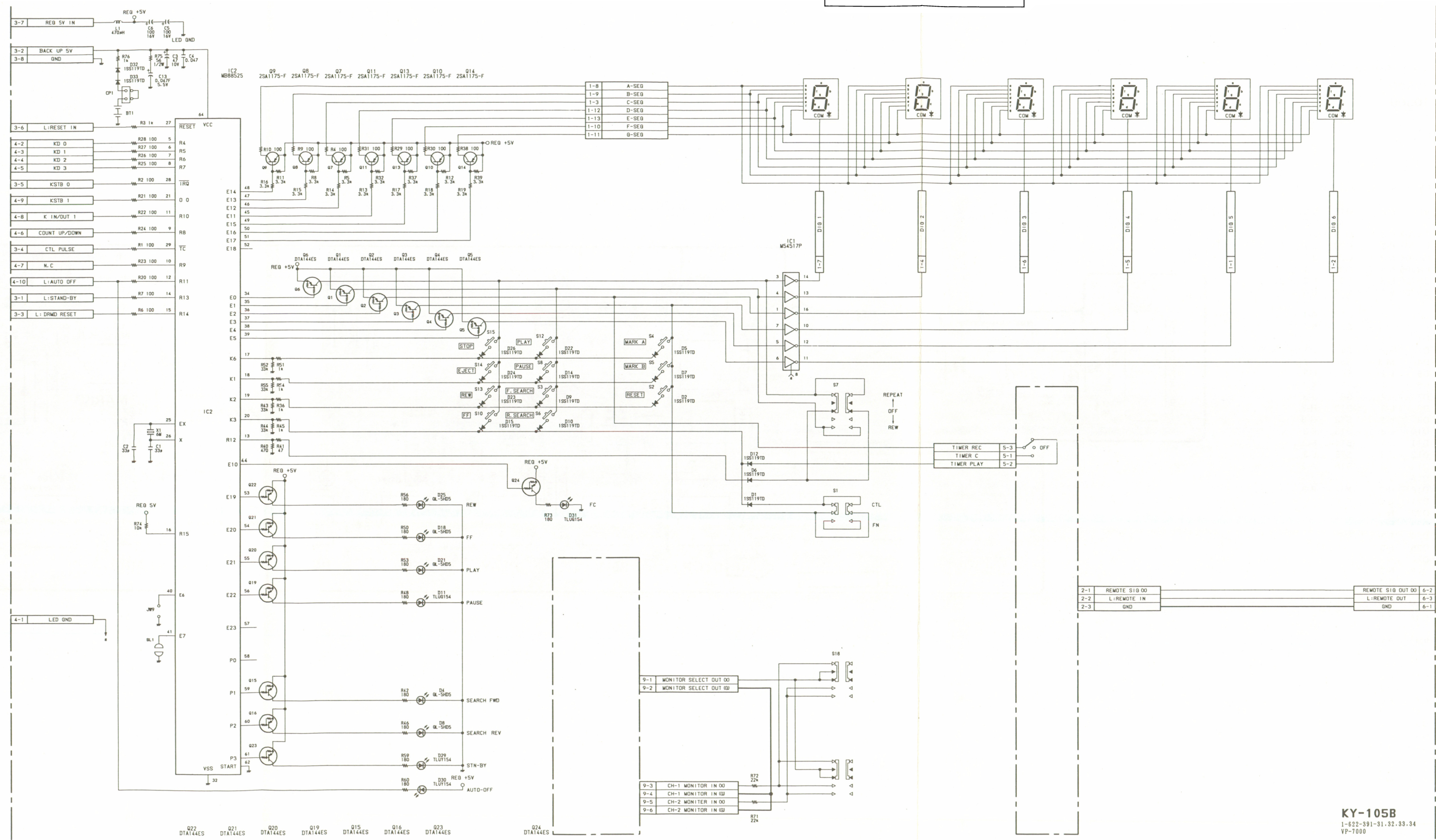


KY-105B

-COMPONENT SIDE-
1-622-391-33
VP-7000

KY-105B:FUNCTION KEY/DISPLAY

UC;S/N 10001 and higher
J; S/N 10001 and higher



KY-105B:FUNCTION KEY/DISPLAY

UC;S/N 12901 and higher
J; S/N 10301 and higher

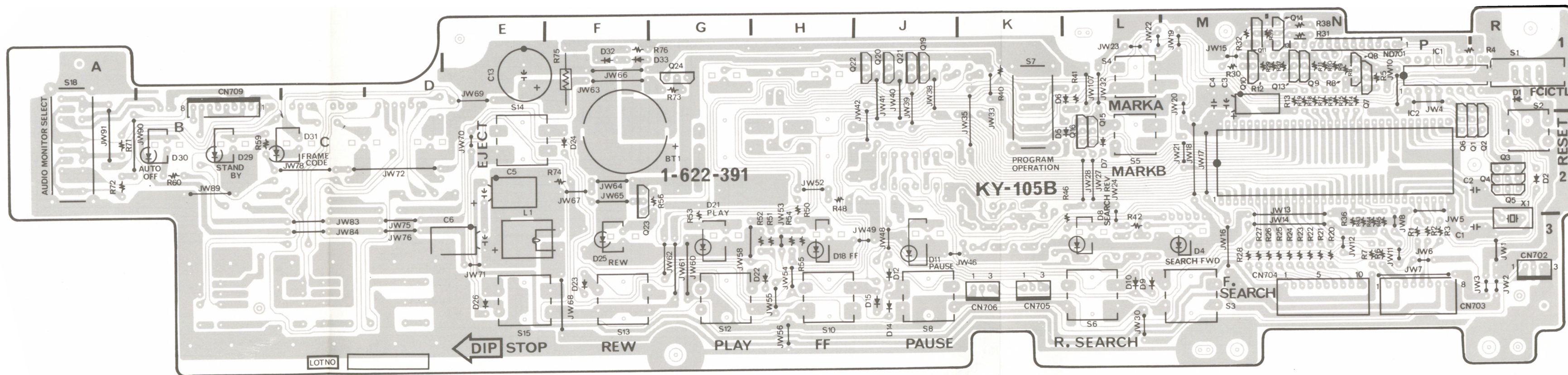
KY-105B (1-622-391-34)

BT1	F-2	Q15	L-2
		Q16	L-2
CN702	R-3	Q19	J-1
CN703	P-3	Q20	J-1
CN704	N-3	Q21	J-1
CN705	K-3	Q22	J-1
CN706	K-3	Q23	F-2
CN709	B-1	Q24	G-1

CP1	G-1	S1	R-1
		S2	R-2
D1	R-1	S3	M-3
D2	R-2	S4	L-1
D4	M-3	S5	L-2
D5	L-2	S6	L-3
D6	L-1	S7	K-1
D7	L-2	S8	J-3
D8	L-3	S10	H-3
D9	L-3	S12	G-3
D10	L-3	S13	F-3
D11	J-3	S14	E-2
D12	J-3	S15	E-3
D14	J-3	S18	A-2
D15	J-3		
D18	H-3	X1	R-3
D21	G-3		
D22	H-3		
D23	F-3		
D24	F-2		
D25	F-3		
D26	E-3		
D29	B-2		
D30	B-2		
D31	C-2		
D32	F-1		
D33	F-1		

IC1	P-1
IC2	N-2

Q1	R-2
Q2	R-2
Q3	R-2
Q4	R-2
Q5	R-2
Q6	P-2
Q7	N-1
Q8	N-1
Q9	N-1
Q10	M-1
Q11	M-1
Q13	N-1
Q14	N-1



KY-105B

-COMPONENT SIDE-

1-622-391-34
VP-7000

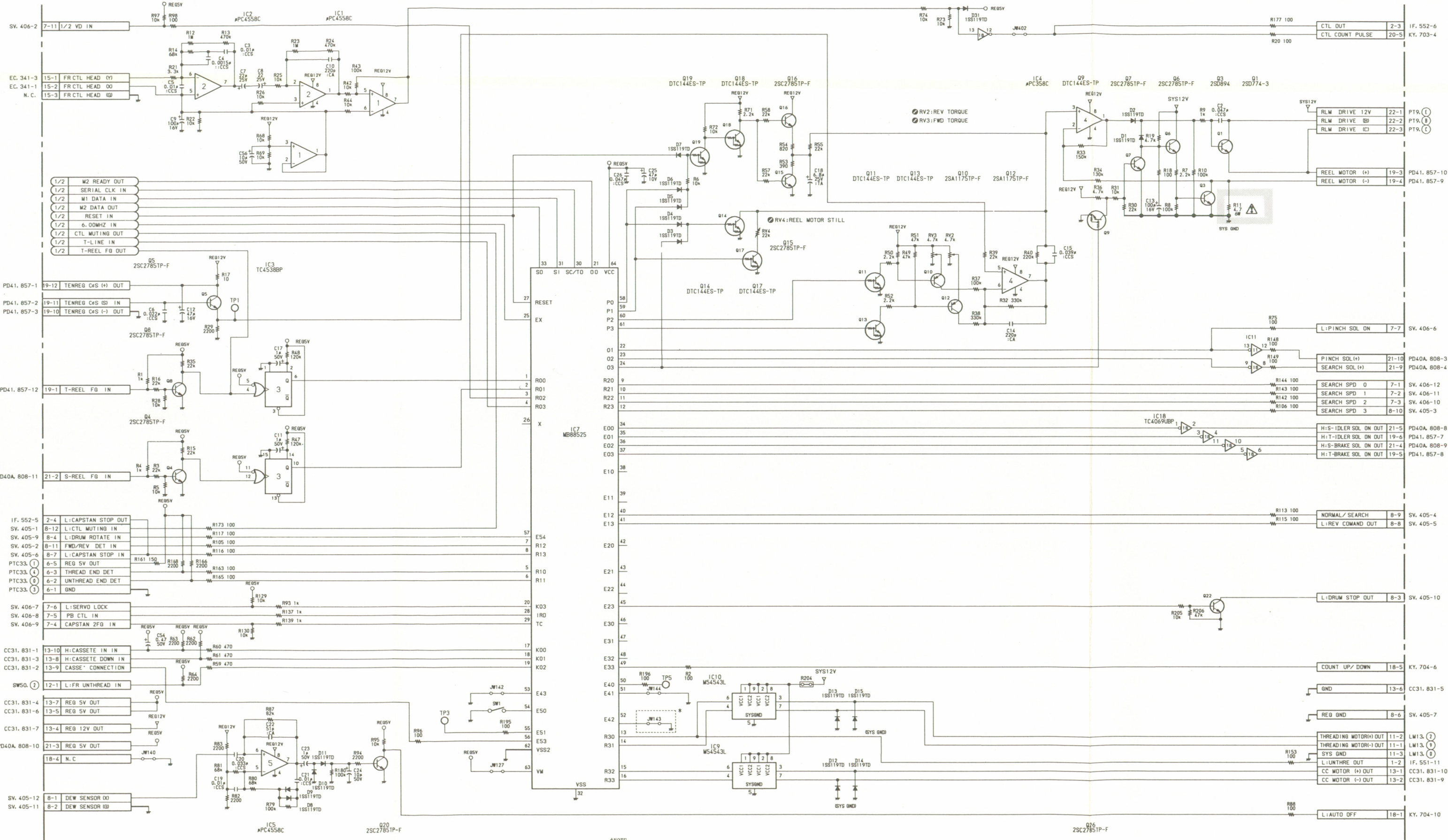
J; S/N 10001 thru 10100



SY-106B(2/2):SYSTEM CONTROL

UC;S/N 10001 thru 10500

J; S/N 10001 thru 10100



注意：△印及びで囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

NOTE:
The shaded and △-marked components are critical to safety.
Replace only with same components as specified.

SY-106B (2/2)

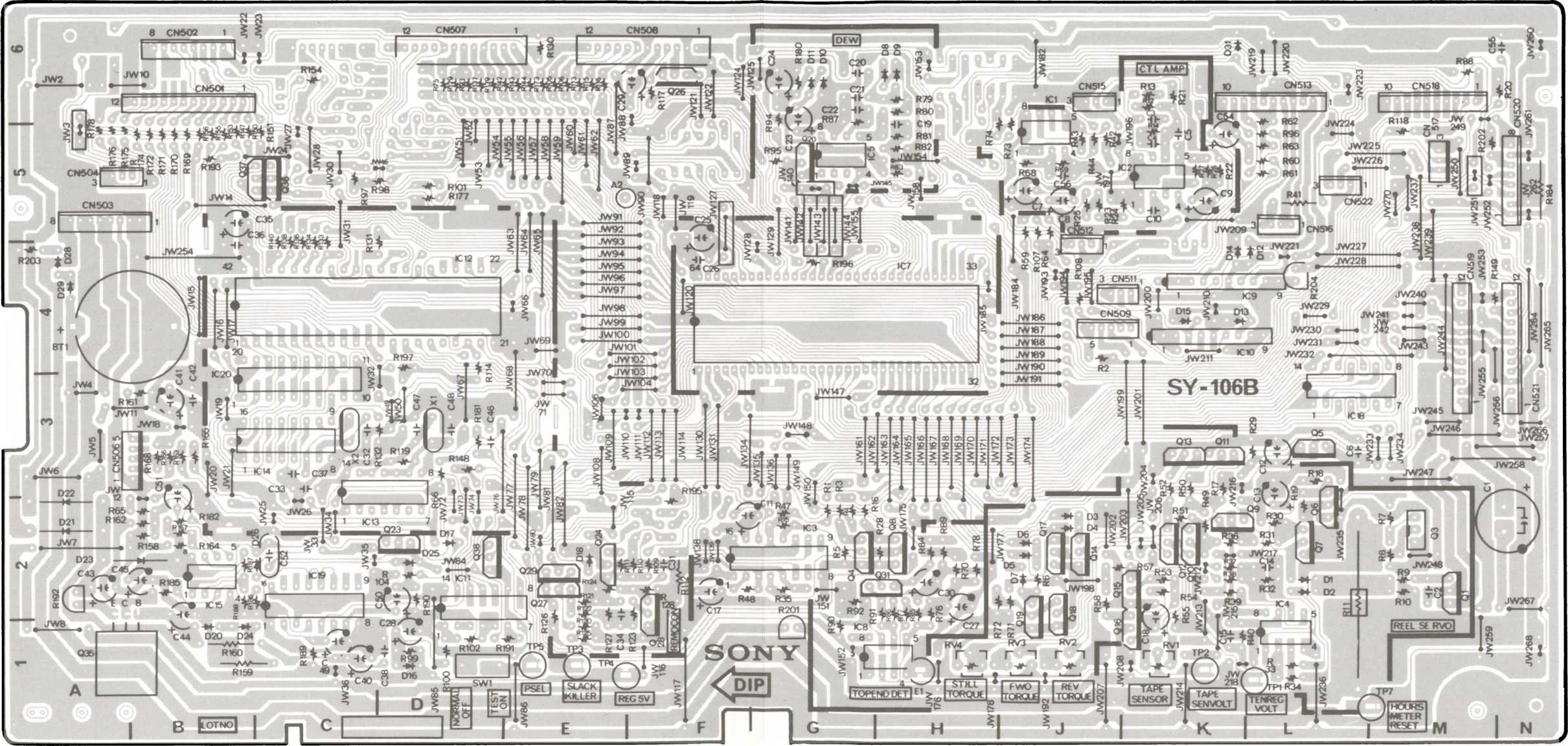
1-822-389-31
VP-7000
VP-7030
VP-7000PM

SY-106B:SYSTEM CONTROL

UC;S/N 10001 thru 10500
J; S/N 10001 thru 10100

SY-106B (1-622-389-31)

BT1	B-4	IC1	J-5	SW1	D-1
		IC2	K-5		
CN501	B-6	IC3	G-2	TP1	L-1
CN502	B-6	IC4	L-1	TP2	K-1
CN503	A-5	IC5	G-5	TP3	E-1
CN504	A-5	IC7	G-4	TP4	E-1
CN506	B-3	IC8	H-1	TP5	E-1
CN507	D-6	IC9	K-4	TP7	M-1
CN508	F-6	IC10	K-4		
CN509	J-4	IC11	D-2	X1	D-3
CN511	K-4	IC12	C-4	X2	C-3
CN512	J-4	IC13	D-3		
CN513	L-6	IC14	C-3		
CN515	J-6	IC15	B-2		
CN516	L-5	IC18	L-3		
CN517	M-5	IC19	C-2		
CN518	M-6	IC20	C-3		
CN519	M-4				
CN520	N-5	Q1	M-2		
CN521	N-4	Q3	M-2		
CN522	L-5	Q4	G-2		
		Q5	L-3		
D1	L-2	Q6	L-2		
D2	L-2	Q7	L-2		
D3	J-2	Q8	H-2		
D4	J-2	Q9	K-2		
D5	J-2	Q10	K-2		
D6	J-2	Q11	K-3		
D7	J-2	Q12	K-2		
D8	H-6	Q13	K-3		
D9	H-6	Q14	J-2		
D10	G-6	Q15	K-2		
D11	G-6	Q16	K-2		
D12	L-4	Q17	J-2		
D13	K-4	Q18	J-2		
D14	K-4	Q19	J-2		
D15	K-4	Q20	G-5		
D16	D-1	Q23	D-2		
D17	D-2	Q24	E-2		
D18	E-2	Q26	F-6		
D20	B-1	Q27	E-2		
D21	A-2	Q28	F-2		
D22	A-2	Q29	E-2		
D23	B-2	Q31	H-2		
D24	B-1	Q35	A-1		
D25	D-2	Q36	C-5		
D26	C-2	Q37	C-5		
D28	A-4				
D29	A-4	RV1	K-1		
D31	K-6	RV2	J-1		
		RV3	J-1		
E1	H-1	RV4	H-1		



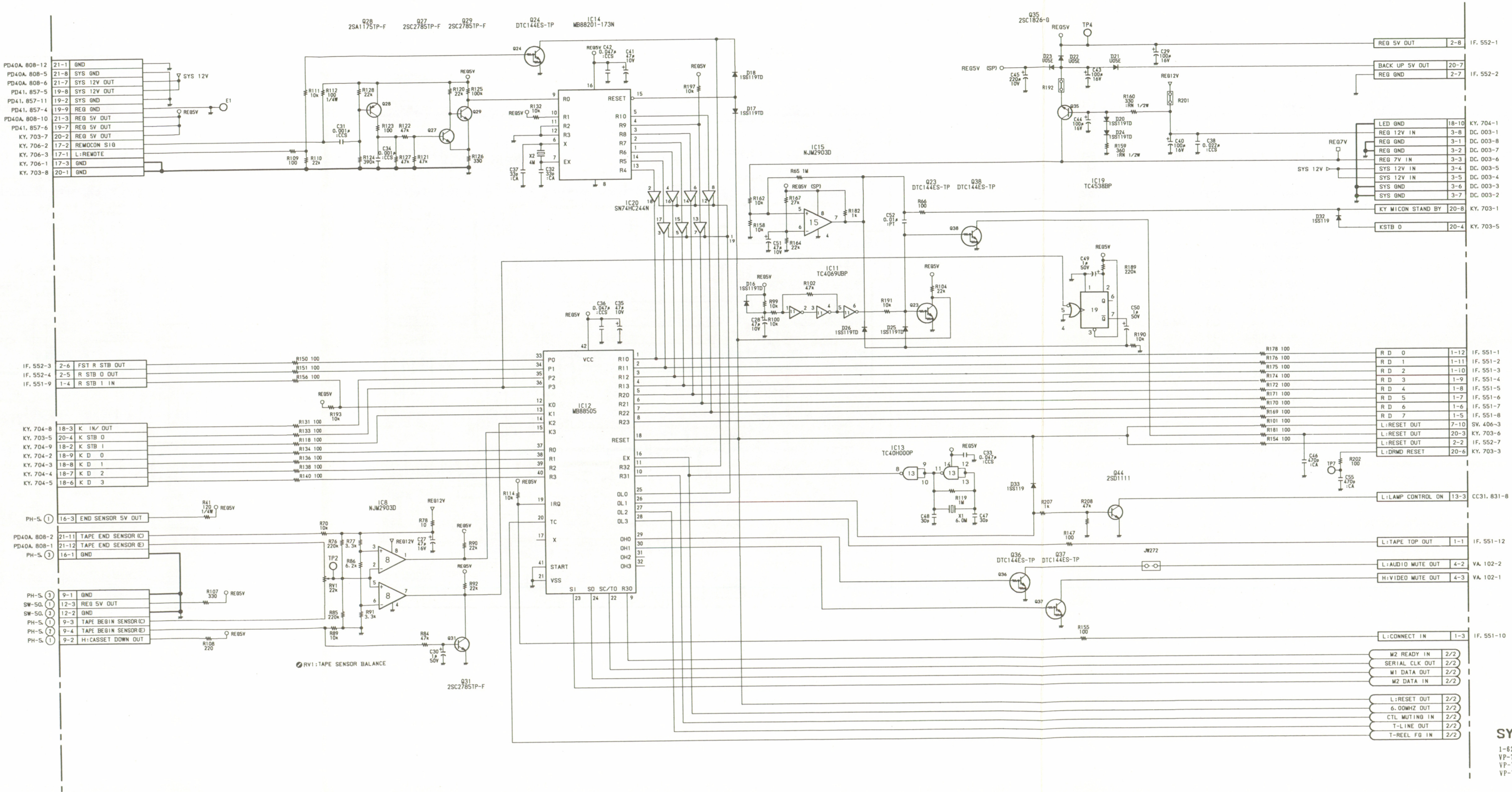
SY-106B

-COMPONENT SIDE-
1-622-389-31
VP-7000
VP-7050
VP-7000PM

SY-106B(1/2):SYSTEM CONTROL

UC; S/N 10501 thru 12900

J; S/N 10101 thru 10300

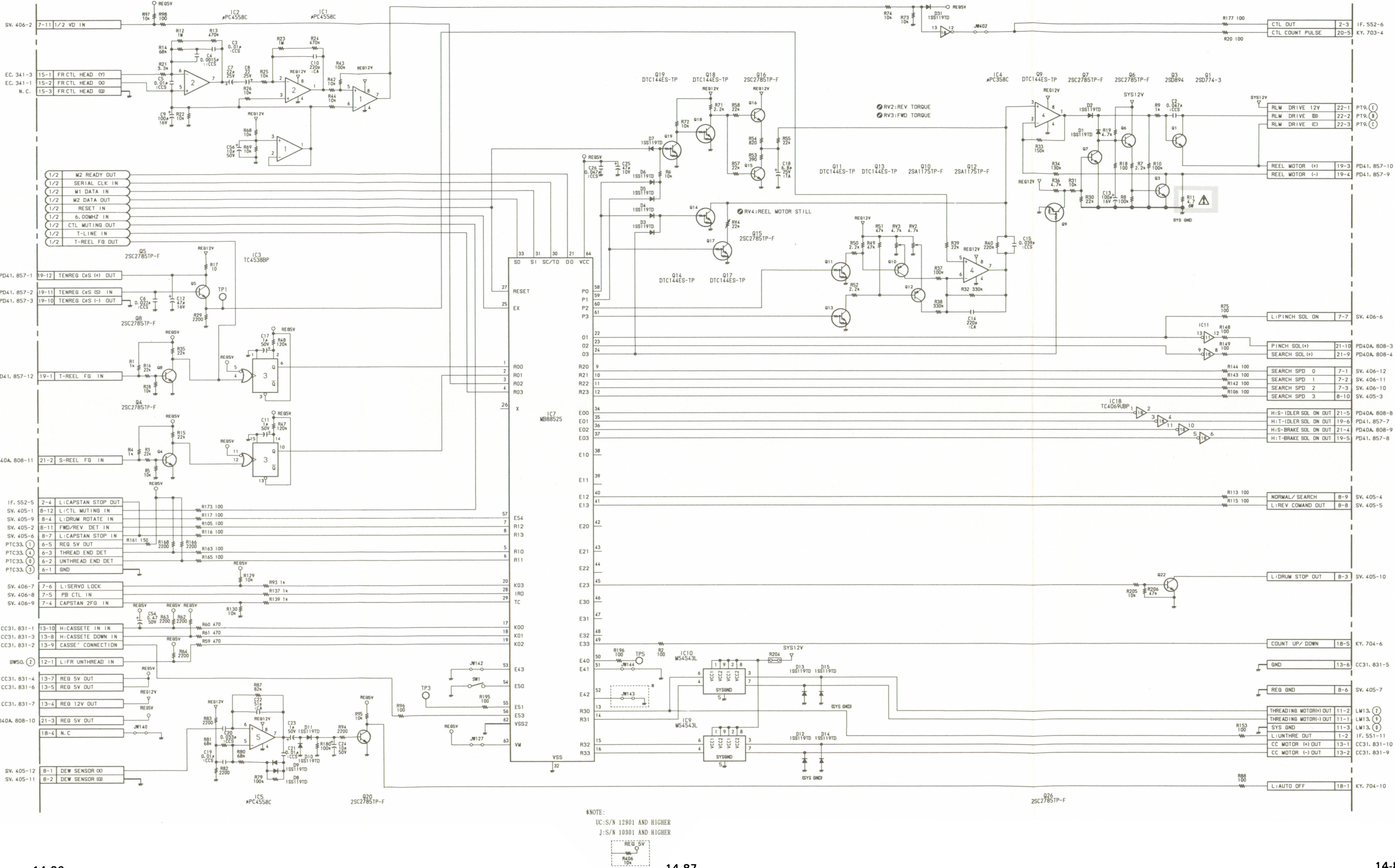


SY-106B (1/2)

1-622-389-32
VP-7000
VP-7030
VP-7000PM

SY-106B(1/2):SYSTEM CONTROL

UC; S/N 10501 thru 12900
J; S/N 10101 thru 10300



注意：△印及び□で囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

NOTE:
The shaded and △-marked components are critical to safety.
Replace only with same components as specified.

SY-106B (2/2)

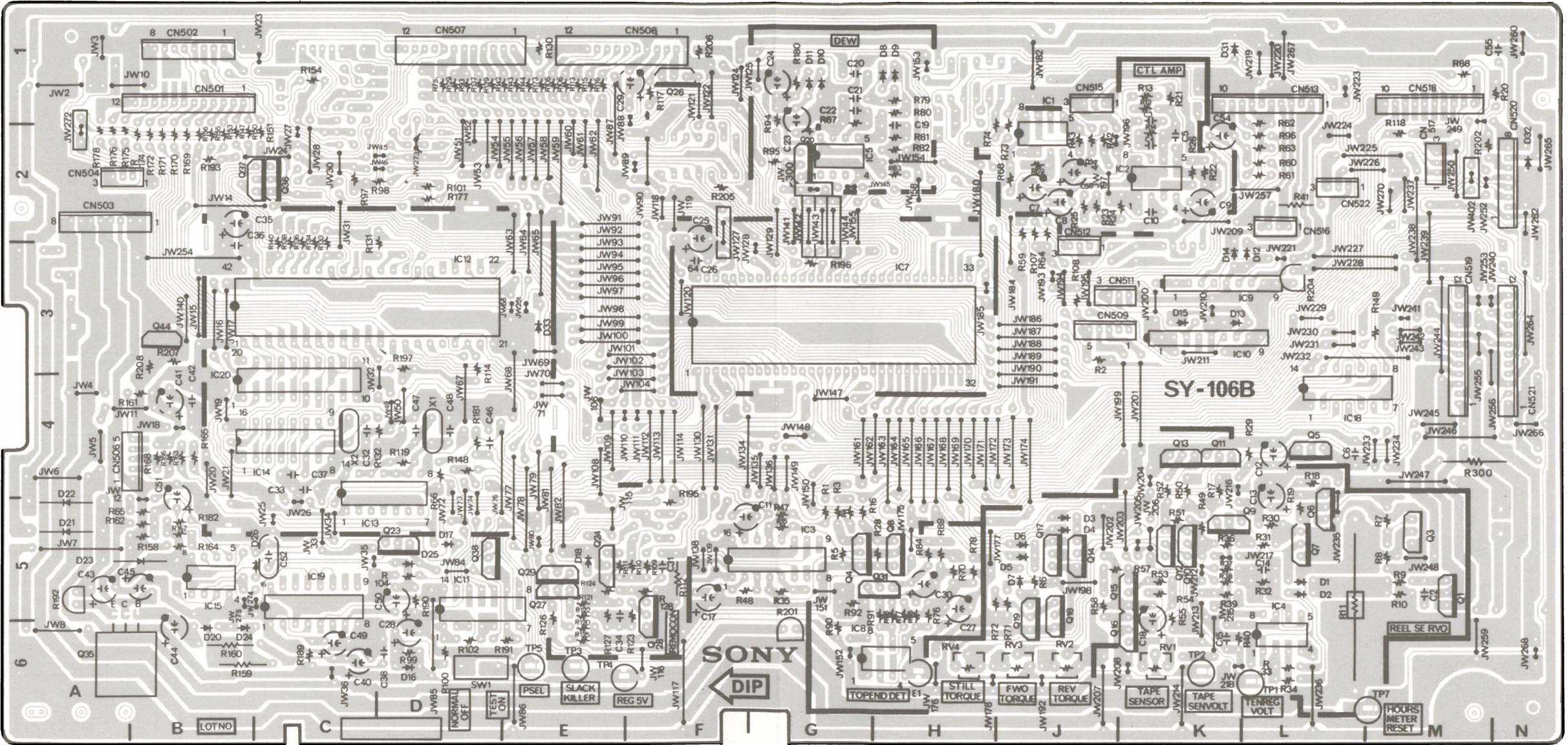
1-622-389-32
VP-7000
VP-7030
VP-7000PM

SY-106B:SYSTEM CONTROL

UC;S/N 10501 thru 12900
J; S/N 10101 thru 10300

SY-106B (1-622-389-32)

CN501 B-1	IC7	G-3	TP4	F-4
CN502 B-1	IC8	H-6	TP5	E-6
CN503 A-2	IC9	K-3	TP7	M-6
CN503 A-2	IC10	K-3		
CN506 B-4	IC11	D-5	X1	D-4
CN507 D-1	IC12	C-3	X2	C-4
CN508 E-1	IC13	D-4		
CN509 J-3	IC14	C-4		
CN511 J-3	IC15	B-5		
CN512 J-3	IC18	L-4		
CN513 L-1	IC19	C-5		
CN515 J-1	IC20	C-4		
CN516 L-2				
CN517 M-2	Q1	M-5		
CN518 M-1	Q3	M-5		
CN519 M-3	Q4	G-5		
CN520 N-2	Q5	L-4		
CN521 N-3	Q6	L-5		
	Q7	L-5		
D1	L-5	Q8	H-5	
D2	L-5	Q9	K-5	
D3	D-5	Q10	K-5	
D4	D-5	Q11	K-4	
D5	D-5	Q12	K-5	
D6	D-5	Q13	K-4	
D7	D-5	Q14	J-5	
D8	H-1	Q15	K-5	
D9	H-1	Q16	K-5	
D10	G-1	Q17	J-5	
D11	G-1	Q18	J-5	
D12	L-3	Q19	J-5	
D13	K-3	Q20	G-2	
D14	K-3	Q23	D-5	
D15	K-3	Q24	E-5	
D16	D-6	Q26	F-1	
D18	E-5	Q27	F-5	
D20	B-6	Q28	F-5	
D21	A-5	Q29	E-5	
D22	A-5	Q35	A-6	
D23	B-5	Q36	C-2	
D24	B-6	Q37	C-2	
D26	C-5	Q38	D-5	
D31	K-1	Q44	B-3	
D32	N-2			
D33	E-3	RV1	K-6	
		RV2	J-6	
E1	H-6	RV3	J-6	
		RV4	H-6	
IC1	J-2			
IC2	K-2	SW1	D-6	
IC3	G-5			
IC4	L-6	TP1	L-6	
IC5	G-2	TP2	K-6	
		TP3	E-6	



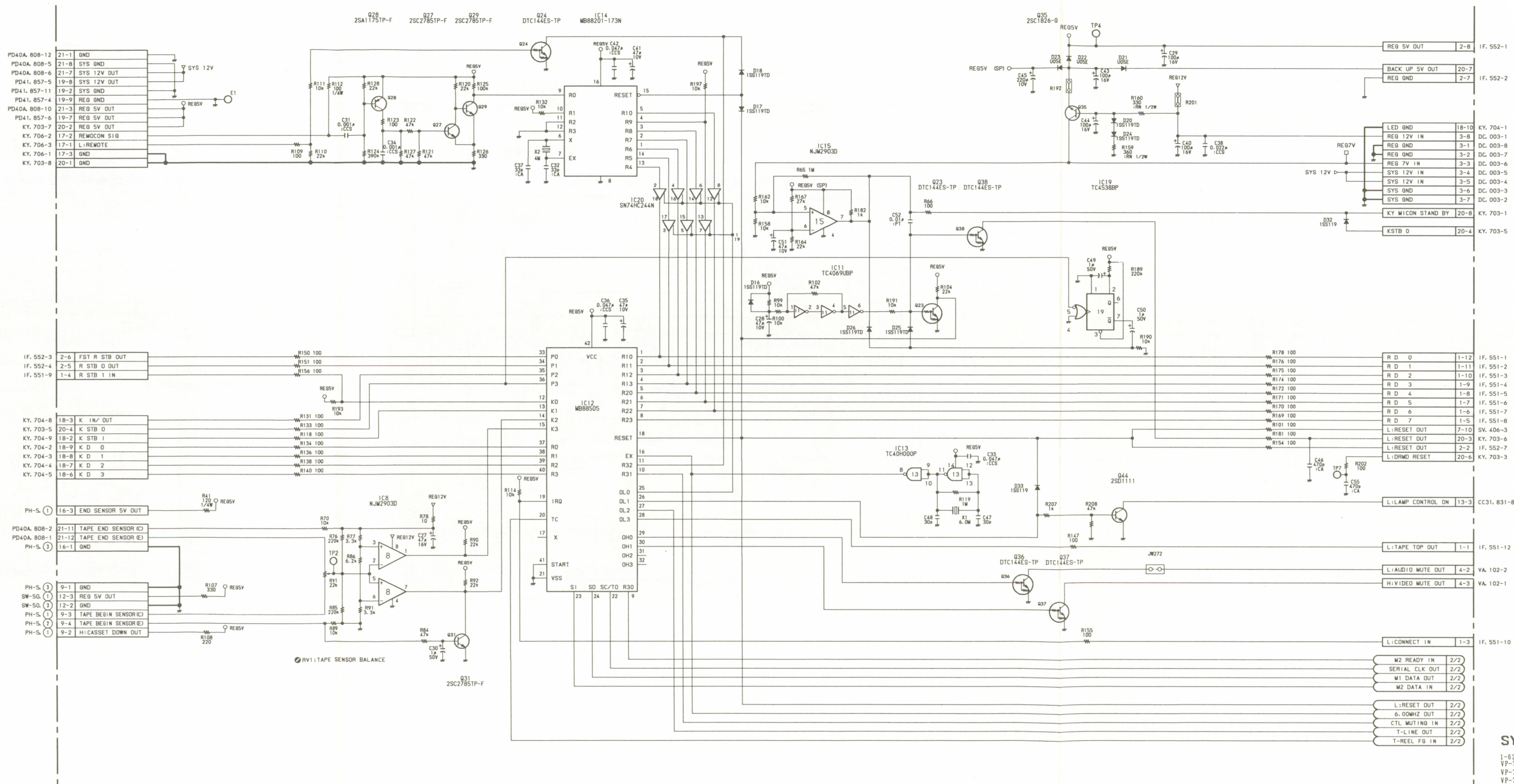
SY-106B

-COMPONENT SIDE-

1-622-389-32
VP-7000
VP-7030
VP-7000PM

SY-106B(1/2):SYSTEM CONTROL

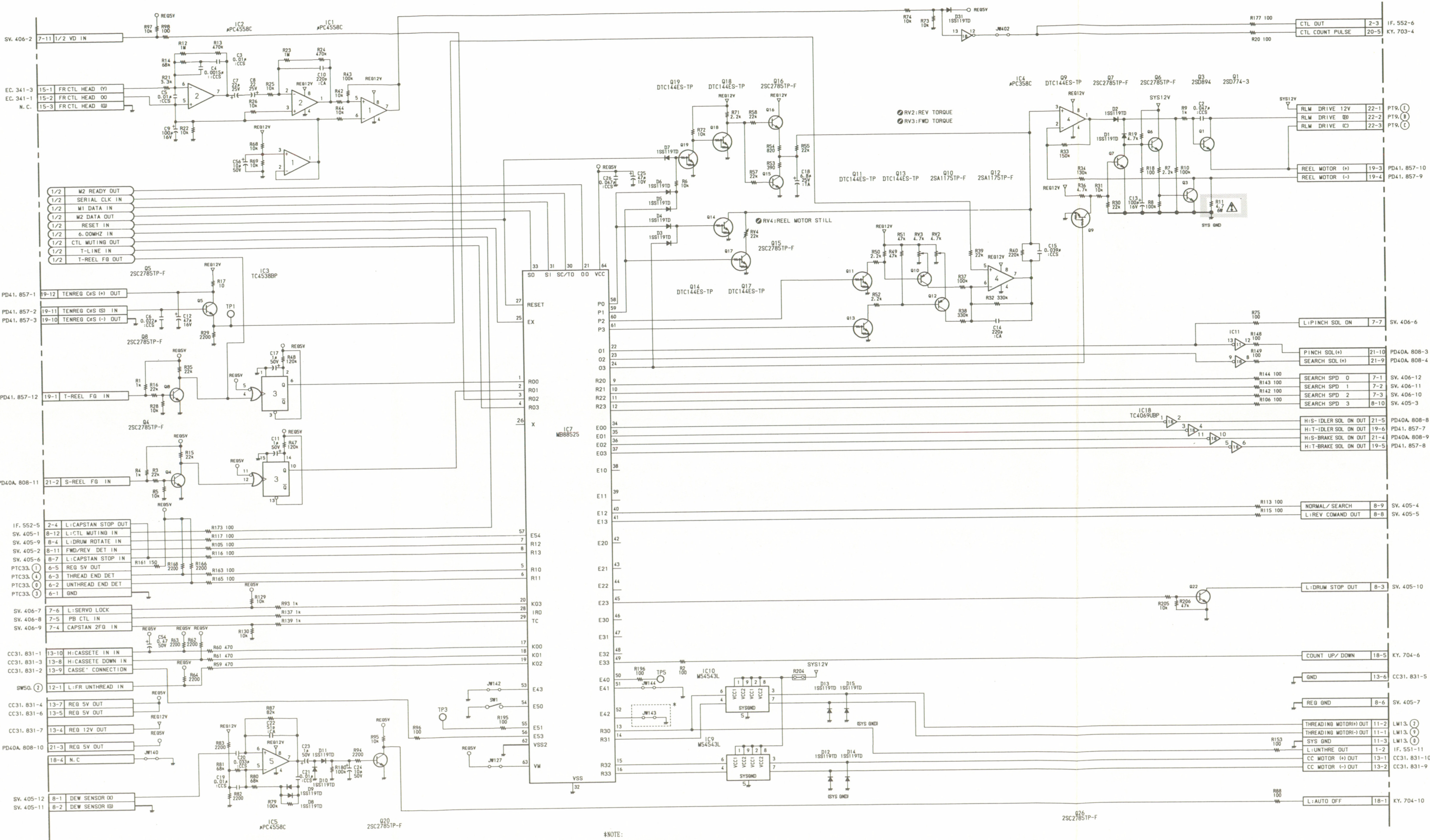
UC;S/N 12901 and higher
J; S/N 10301 and higher



SY-106B (1/2)

1-622-389-33
VP-7000
VP-7030
VP-7000PM

UC;S/N 12901 and higher
J; S/N 10301 and higher



注意: 印及び で囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

NOTE;

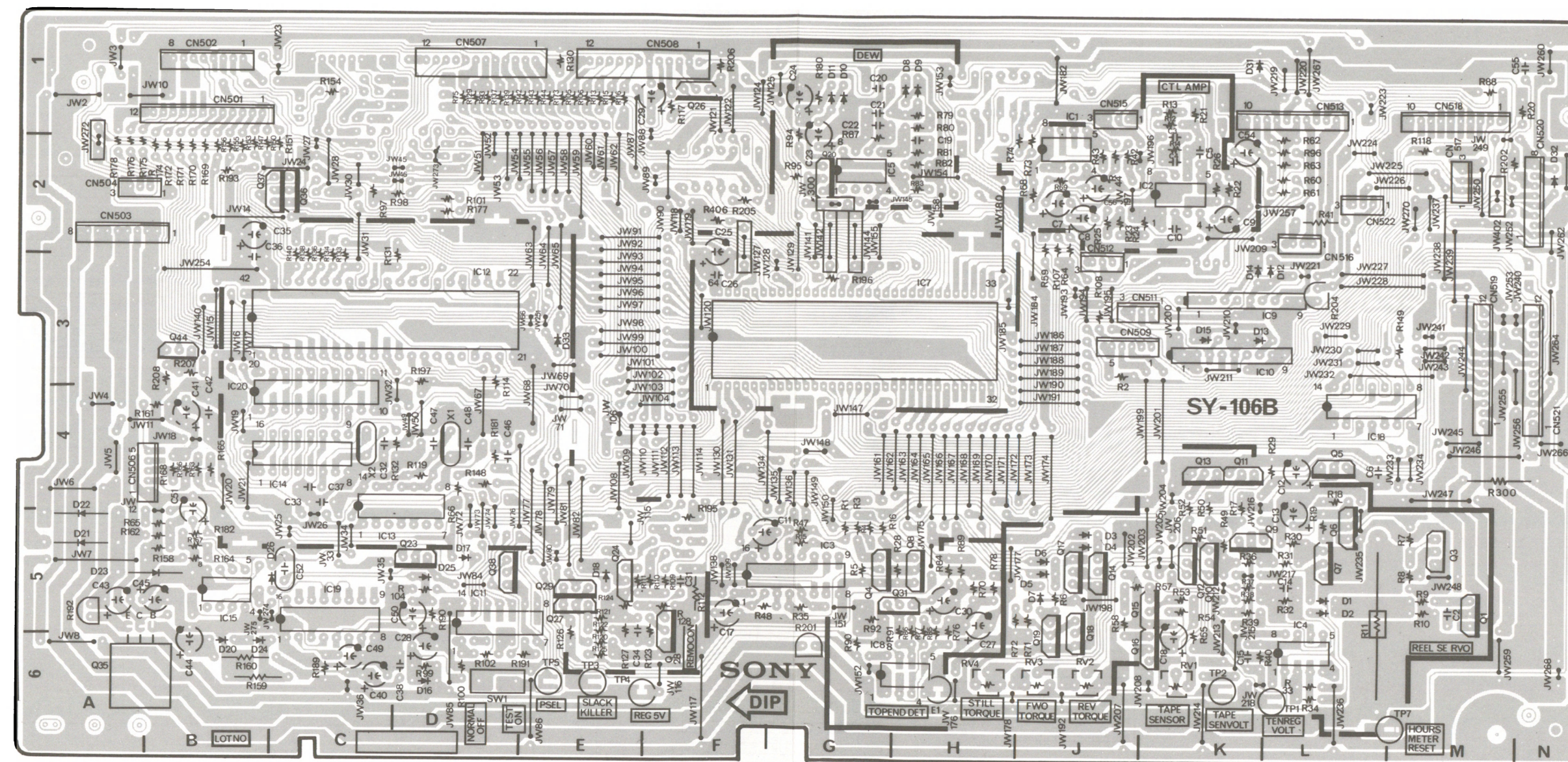
The shaded and -marked components are critical to safety.
Replace only with same components as specified.

SY-106B (2/2)

1-622-389-33
VP-7000
VP-7030
VP-7000PM

UC;S/N 12901 and higher
J; S/N 10301 and higher

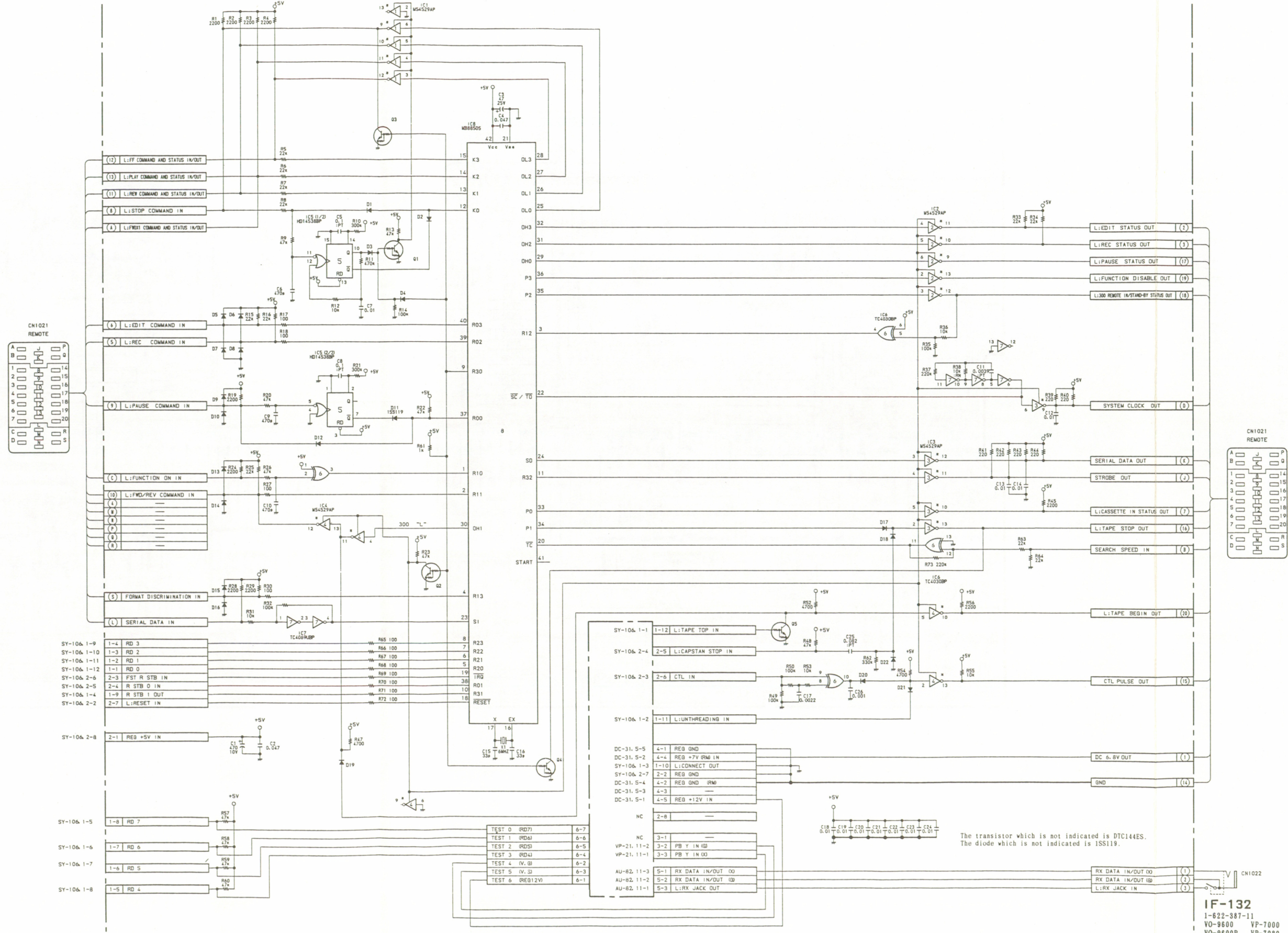
CN501	B-1	IC7	G-3	TP4	F-4
CN502	B-1	IC8	H-6	TP5	E-6
CN503	A-2	IC9	K-3	TP7	M-6
CN503	A-2	IC10	K-3		
CN506	B-4	IC11	D-5	X1	D-4
CN507	D-1	IC12	C-3	X2	C-4
CN508	E-1	IC13	D-4		
CN509	J-3	IC14	C-4		
CN511	J-3	IC15	B-5		
CN512	J-3	IC18	L-4		
CN513	L-1	IC19	C-5		
CN515	J-1	IC20	C-4		
CN516	L-2				
CN517	M-2	Q1	M-5		
CN518	M-1	Q3	M-5		
CN519	M-3	Q4	G-5		
CN520	N-2	Q5	L-4		
CN521	N-3	Q6	L-5		
		Q7	L-5		
D1	L-5	Q8	H-5		
D2	L-5	Q9	K-5		
D3	D-5	Q10	K-5		
D4	D-5	Q11	K-4		
D5	D-5	Q12	K-5		
D6	D-5	Q13	K-4		
D7	D-5	Q14	J-5		
D8	H-1	Q15	K-5		
D9	H-1	Q16	K-5		
D10	G-1	Q17	J-5		
D11	G-1	Q18	J-5		
D12	L-3	Q19	J-5		
D13	K-3	Q20	G-2		
D14	K-3	Q23	D-5		
D15	K-3	Q24	E-5		
D16	D-6	Q26	F-1		
D18	E-5	Q27	F-5		
D20	B-6	Q28	F-5		
D21	A-5	Q29	E-5		
D22	A-5	Q35	A-6		
D23	B-5	Q36	C-2		
D24	B-6	Q37	C-2		
D26	C-5	Q38	D-5		
D31	K-1	Q44	B-3		
D32	N-2				
D33	E-3	RV1	K-6		
		RV2	J-6		
E1	H-6	RV3	J-6		
		RV4	H-6		
IC1	J-2				
IC2	K-2	SW1	D-6		
IC3	G-5				
IC4	L-6	TP1	L-6		
IC5	G-2	TP2	K-6		
		TP3	E-6		



SY-106B
-COMPONENT SIDE-
1-622-389-33
VP-7000
VP-7030
VP-7000PM

IF-132:33P INTERFACE

UC;S/N 10001 thru 13750
J; S/N 10001 thru 10350



IF-132
1-622-387-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

IF-132:33P INTERFACE

UC;S/N 10001 thru 13750
J; S/N 10001 thru 10350

IF-132 (1-622-387-11)

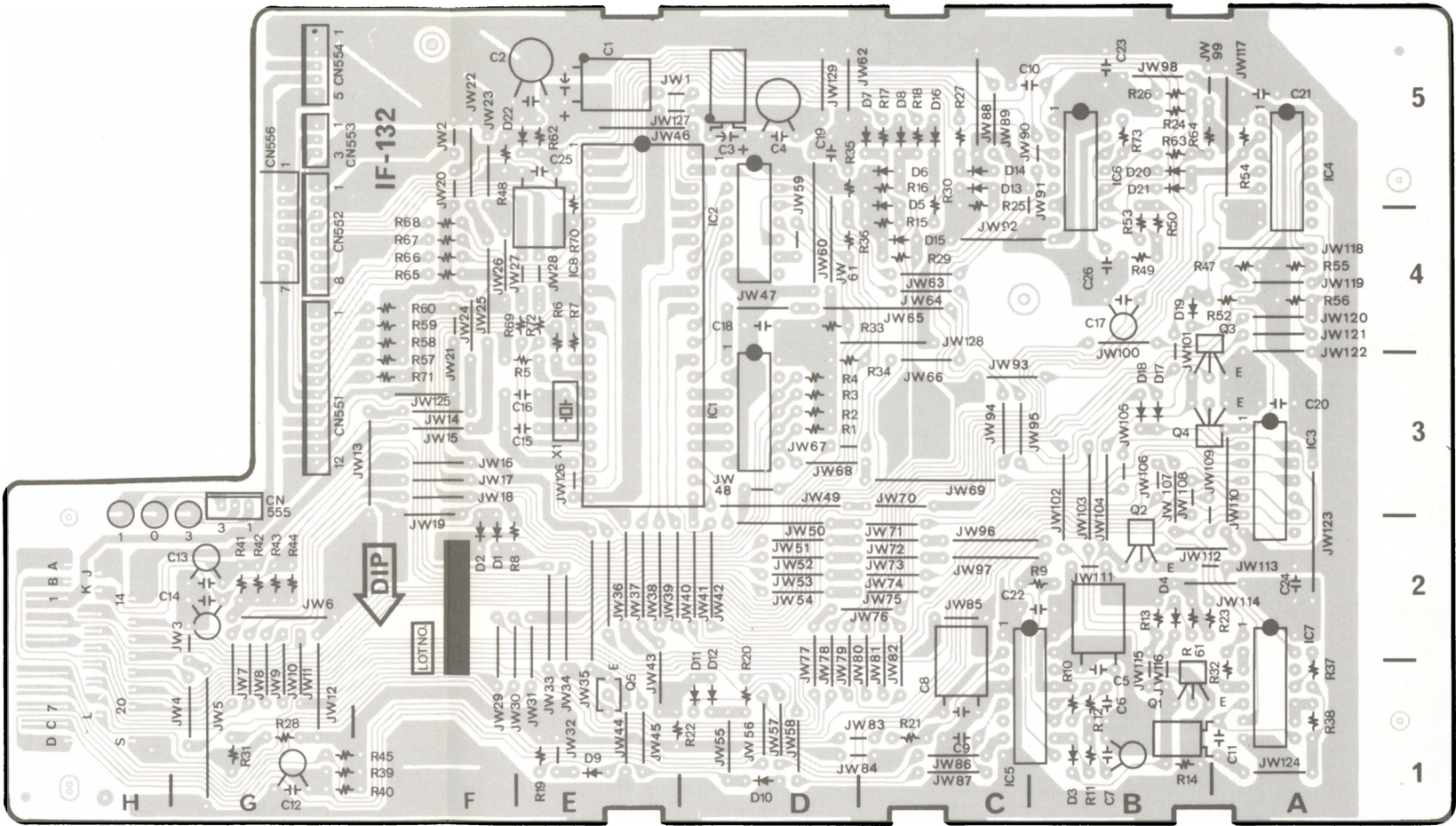
CN551 G-3
CN552 G-4
CN553 G-5
CN554 G-5
CN555 G-3
CN556 G-4

D1 F-2
D2 F-2
D3 B-1
D4 B-2
D5 C-5
D6 C-5
D7 C-5
D8 C-5
D9 E-1
D10 D-1
D11 D-1
D12 D-1
D13 C-5
D14 C-5
D15 C-4
D16 C-5
D17 B-3
D18 B-3
D19 B-4
D20 B-5
D21 B-5
D22 E-5

IC1 D-3
IC2 D-4
IC3 A-3
IC4 A-5
IC5 C-2
IC6 B-5
IC7 A-1
IC8 E-4

Q1 B-1
Q2 B-2
Q3 B-4
Q4 B-3
Q5 E-1

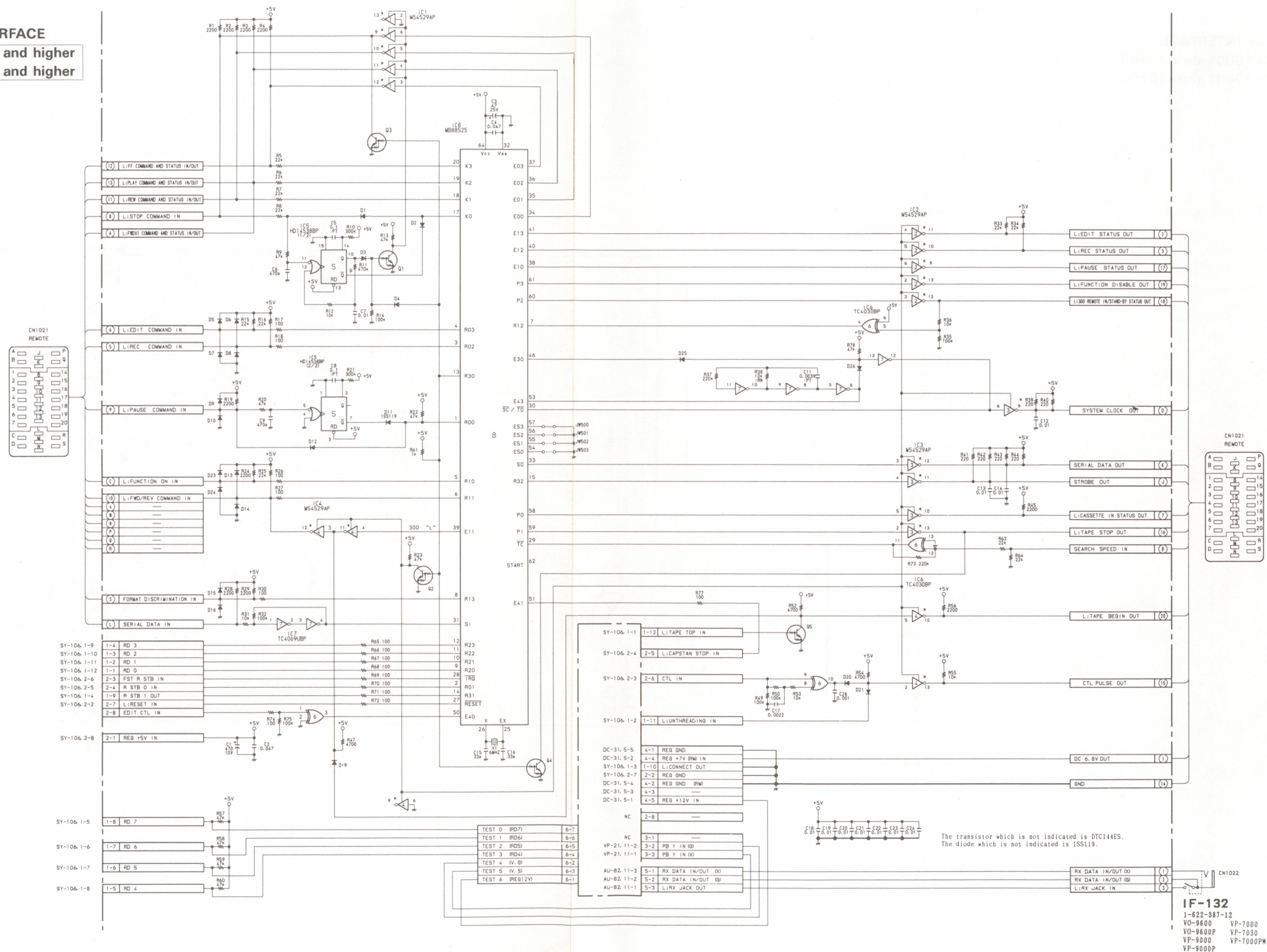
X1 E-3



IF-132
-COMPONENT SIDE-
1-622-387-11
V0-9600 VP-7000
V0-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

IF-132:33P INTERFACE

UC; S/N 13751 and higher
J; S/N 10351 and higher



IF-132

1-622-387-12

VO-9600 VP-1000

VO-9600P VP-1030

VP-9000 VP-1000PM

VP-9000P

IF-132:33P INTERFACE

UC;S/N 13751 and higher
J; S/N 10351 and higher

IF-132 (1-622-387-12)

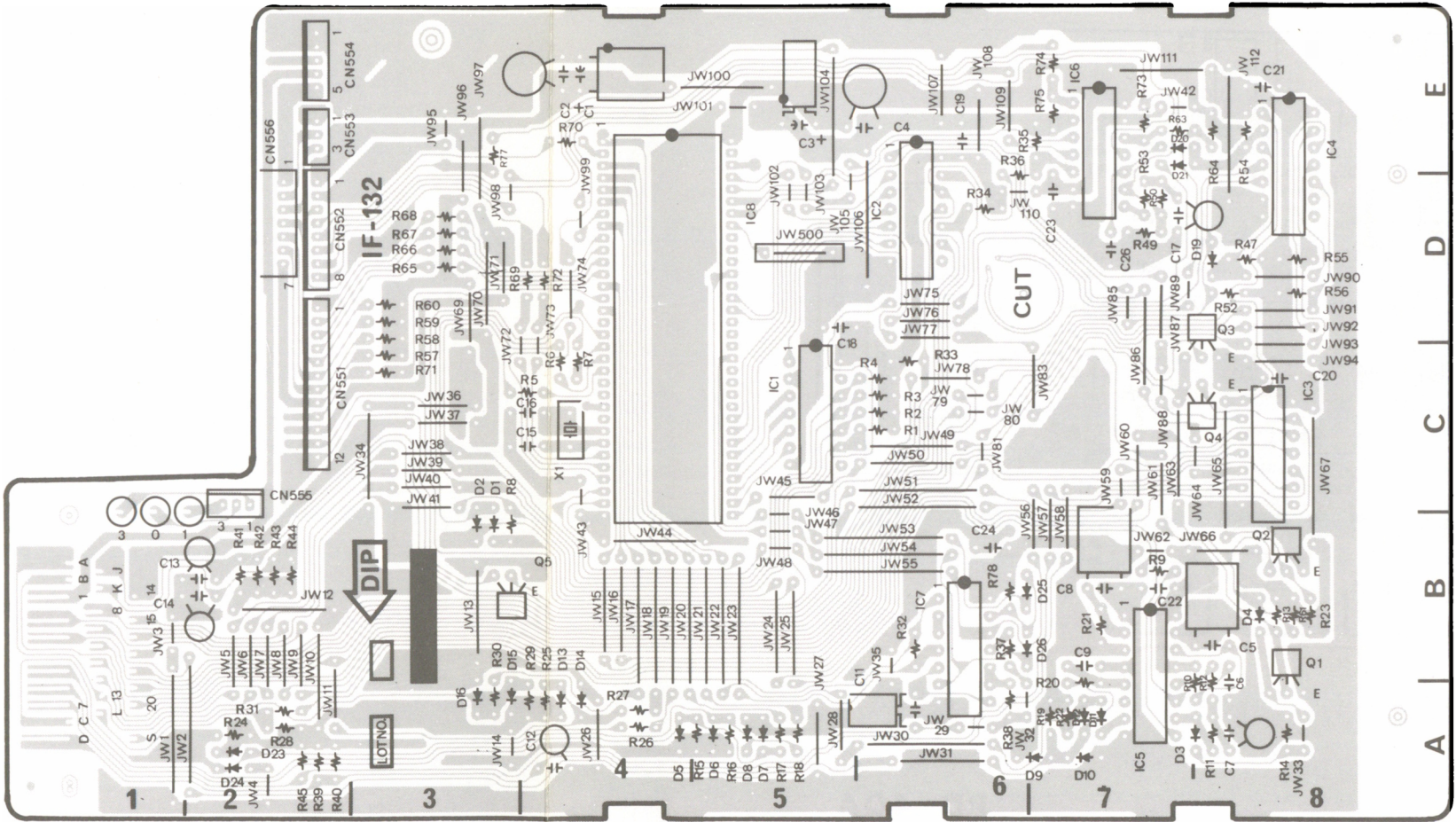
CN551 C-2
CN552 D-2
CN553 E-2
CN554 E-2
CN555 C-2
CN556 D-2

D1 B-3
D2 B-3
D3 A-8
D4 B-8
D5 A-4
D6 A-5
D7 A-5
D8 A-5
D9 A-7
D10 A-7
D13 A-4
D14 A-4
D15 A-3
D16 A-3
D19 D-8
D20 E-7
D21 E-7
D23 A-2
D24 A-2
D25 B-7
D26 B-7

IC1 C-5
IC2 D-6
IC3 C-8
IC4 E-8
IC5 B-7
IC6 E-7
IC7 B-6
IC8 D-4

Q1 B-8
Q2 B-8
Q3 D-8
Q4 C-8
Q5 B-3

X1 C-4

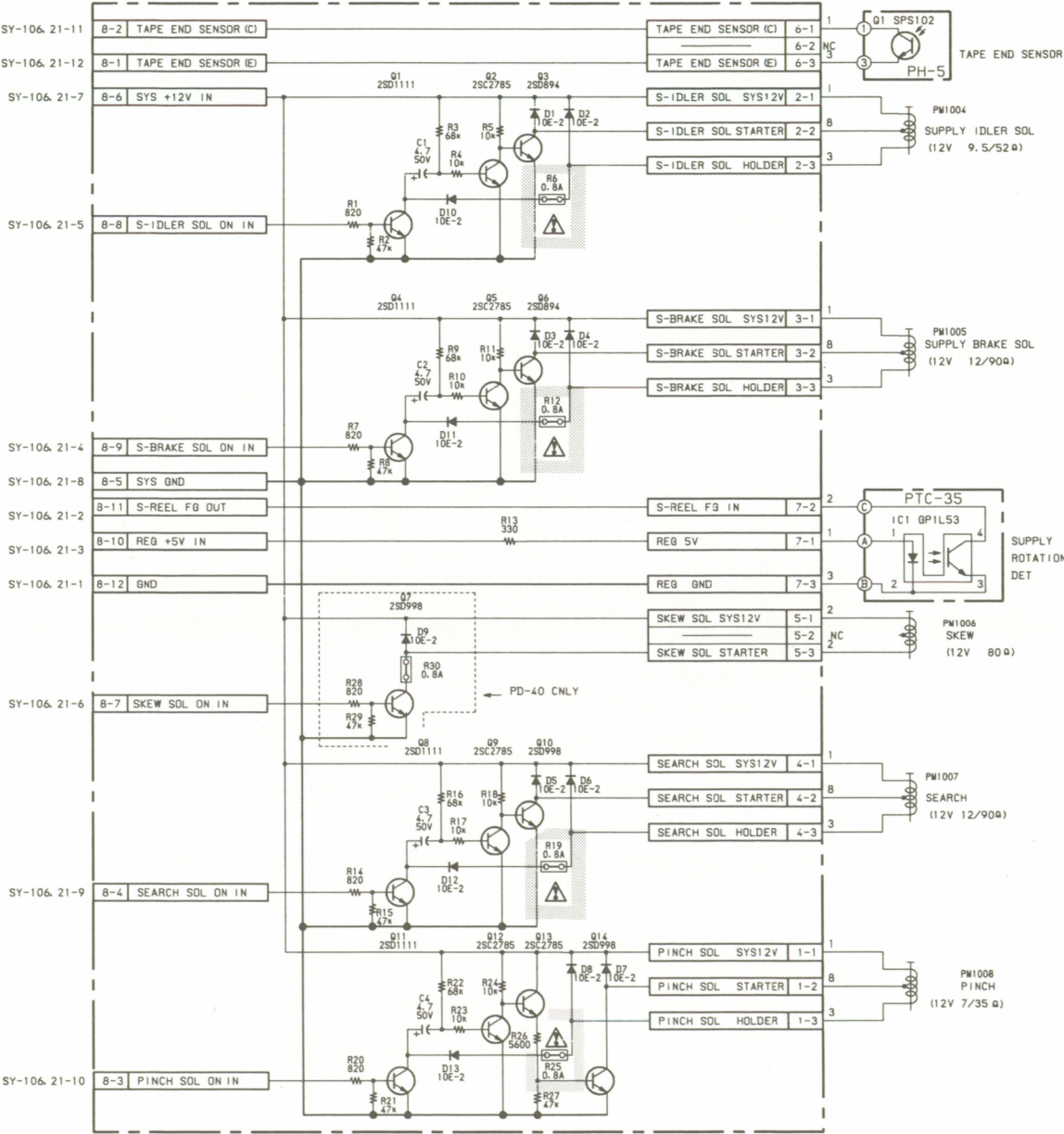


IF-132

-COMPONENT SIDE-

1-622-387-12
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

PD-40A:PLUNGER SOLENOIDS



PD-40/A

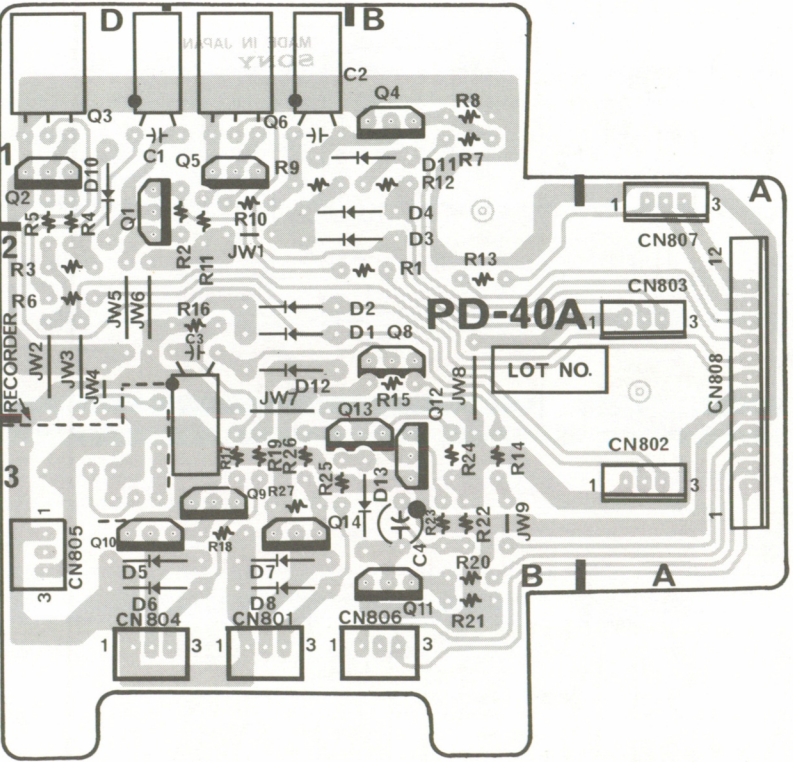
1-622-216-11/-21
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

注意：

△印及びで囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

NOTE:

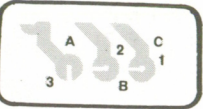
The shaded and △-marked components are critical to safety.
Replace only with same components as specified.



PD-40A

-COMPONENT SIDE-

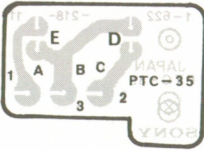
1-622-216-11/-21
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



PH-5

-COMPONENT SIDE-

1-603-737-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

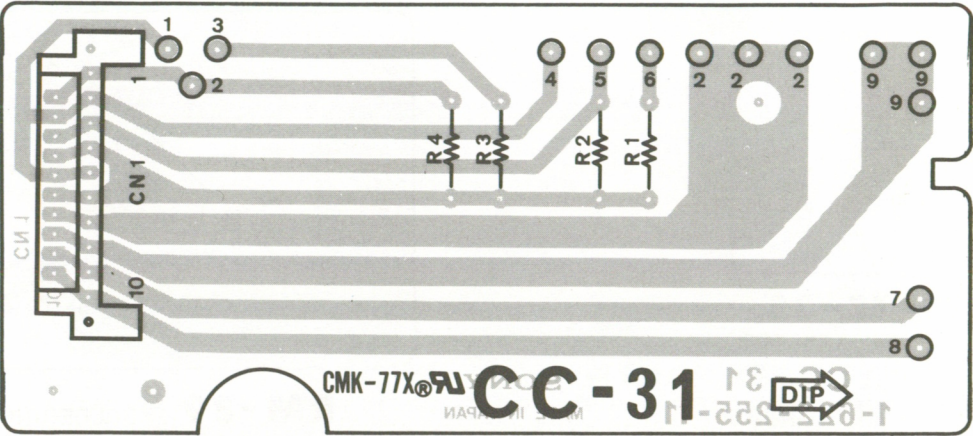


PTC-35

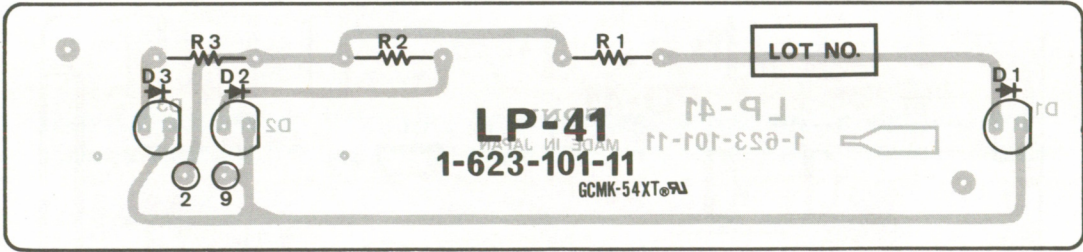
-COMPONENT SIDE-

1-622-216-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

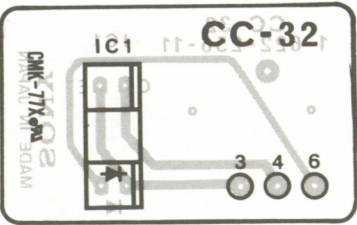
CC-31: CASSETTE COMPARTMENT DRIVER
CC-32: CASSETTE IN DETECTOR
CC-33: CASSETTE DOWN DETECTOR
LP-41: CASSETTE COMPARTMENT LIGHT



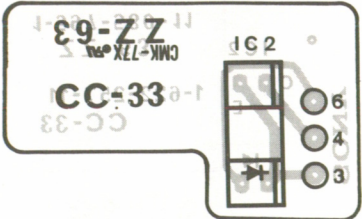
CC-31
-COMPONENT SIDE-
I-622-255-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



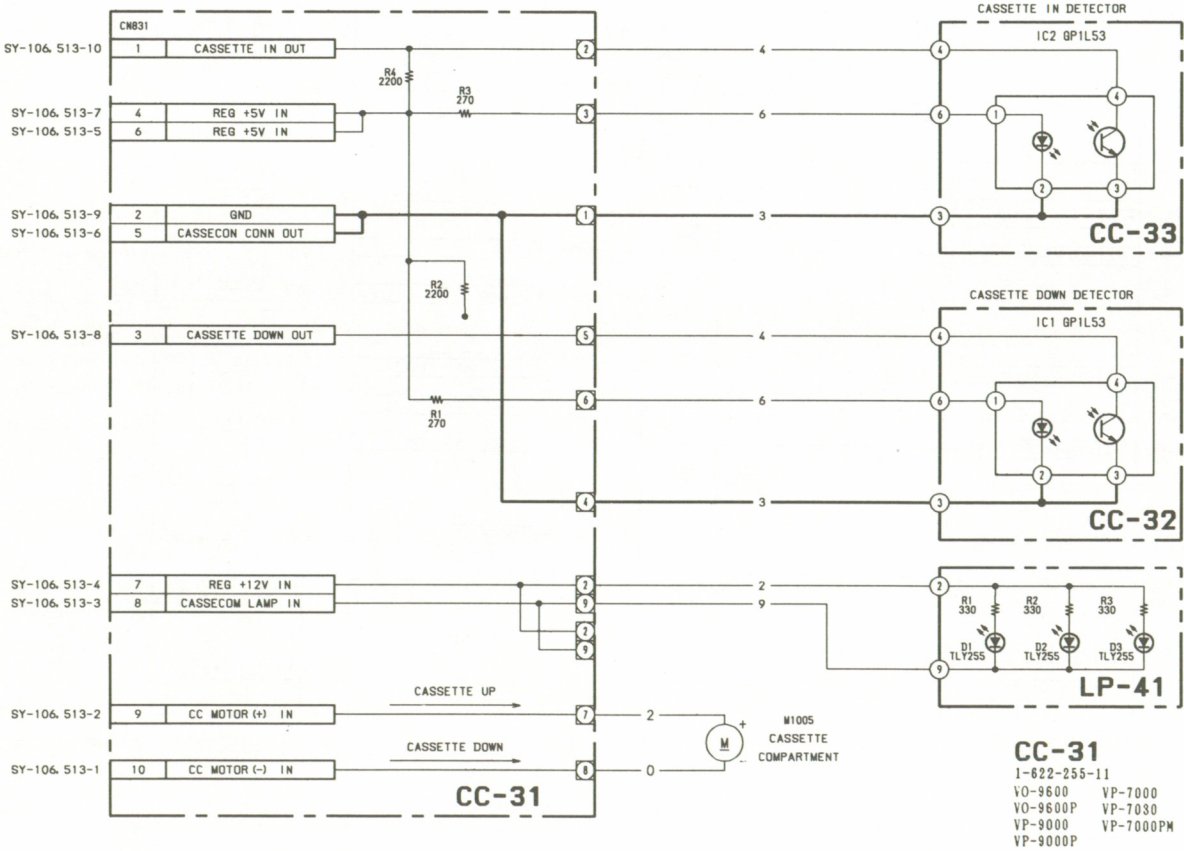
LP-41
-COMPONENT SIDE-
I-623-101-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



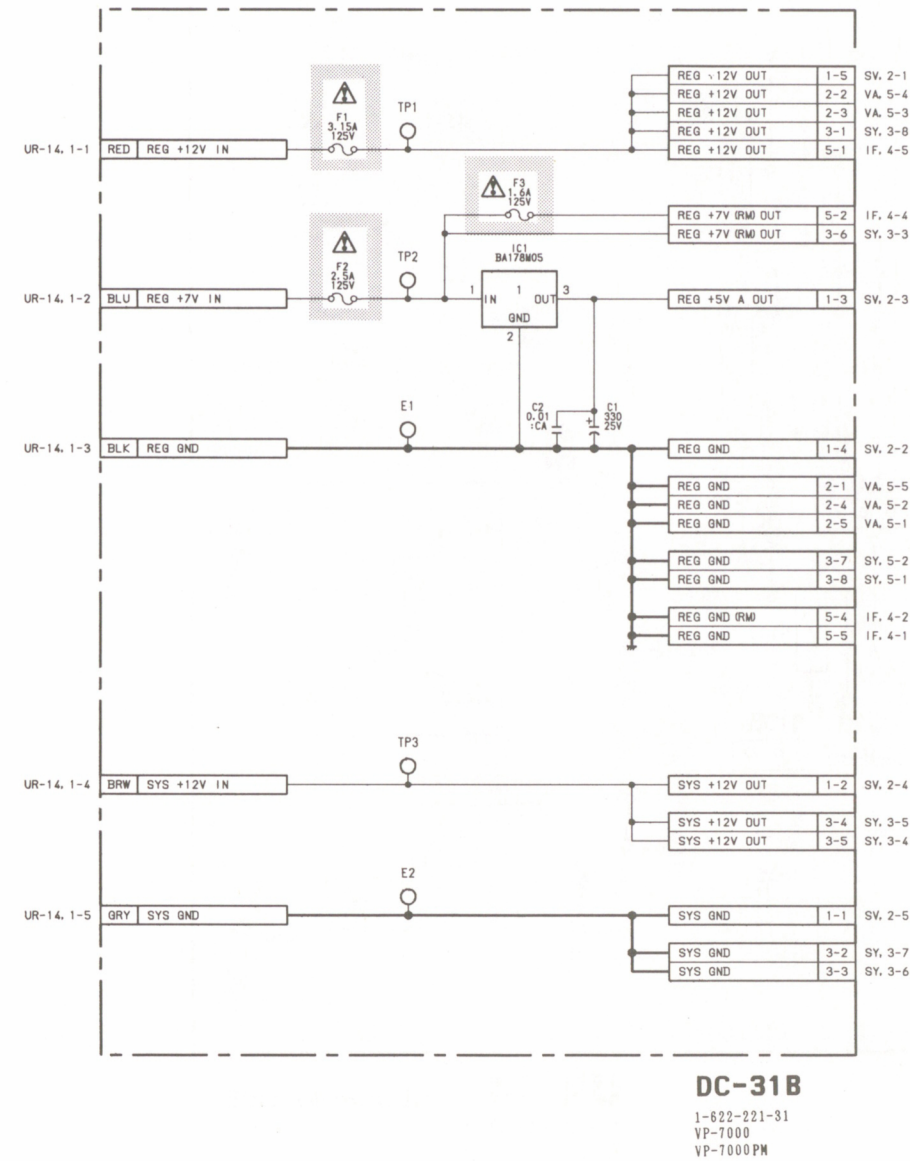
CC-32
-COMPONENT SIDE-
I-622-256-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



CC-33
-COMPONENT SIDE-
I-622-257-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



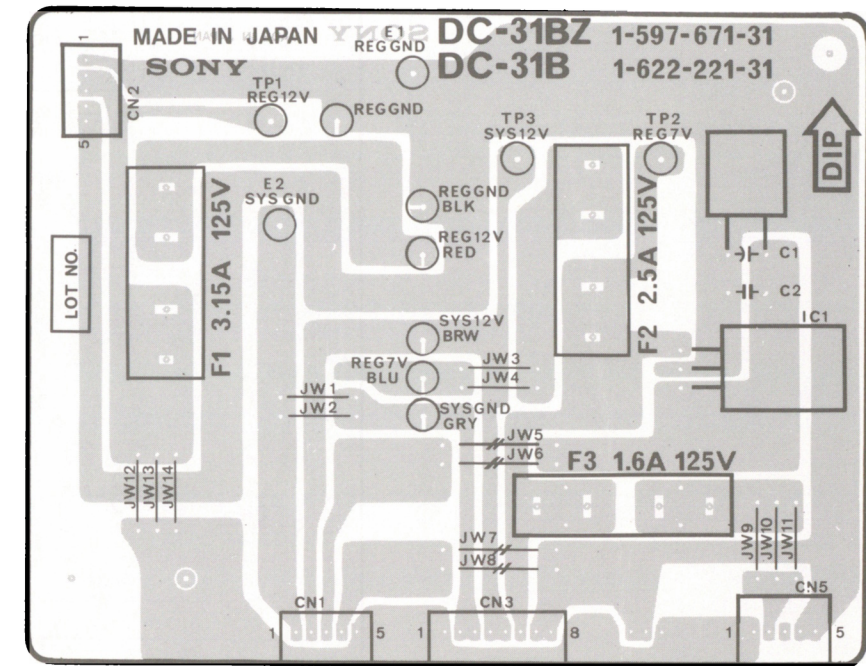
DC-31B:DC SUPPLY



注意：△印及びで囲まれた部品は安全性を維持するために重要な部品です。従って交換する時は必ず指定の部品を使って下さい。

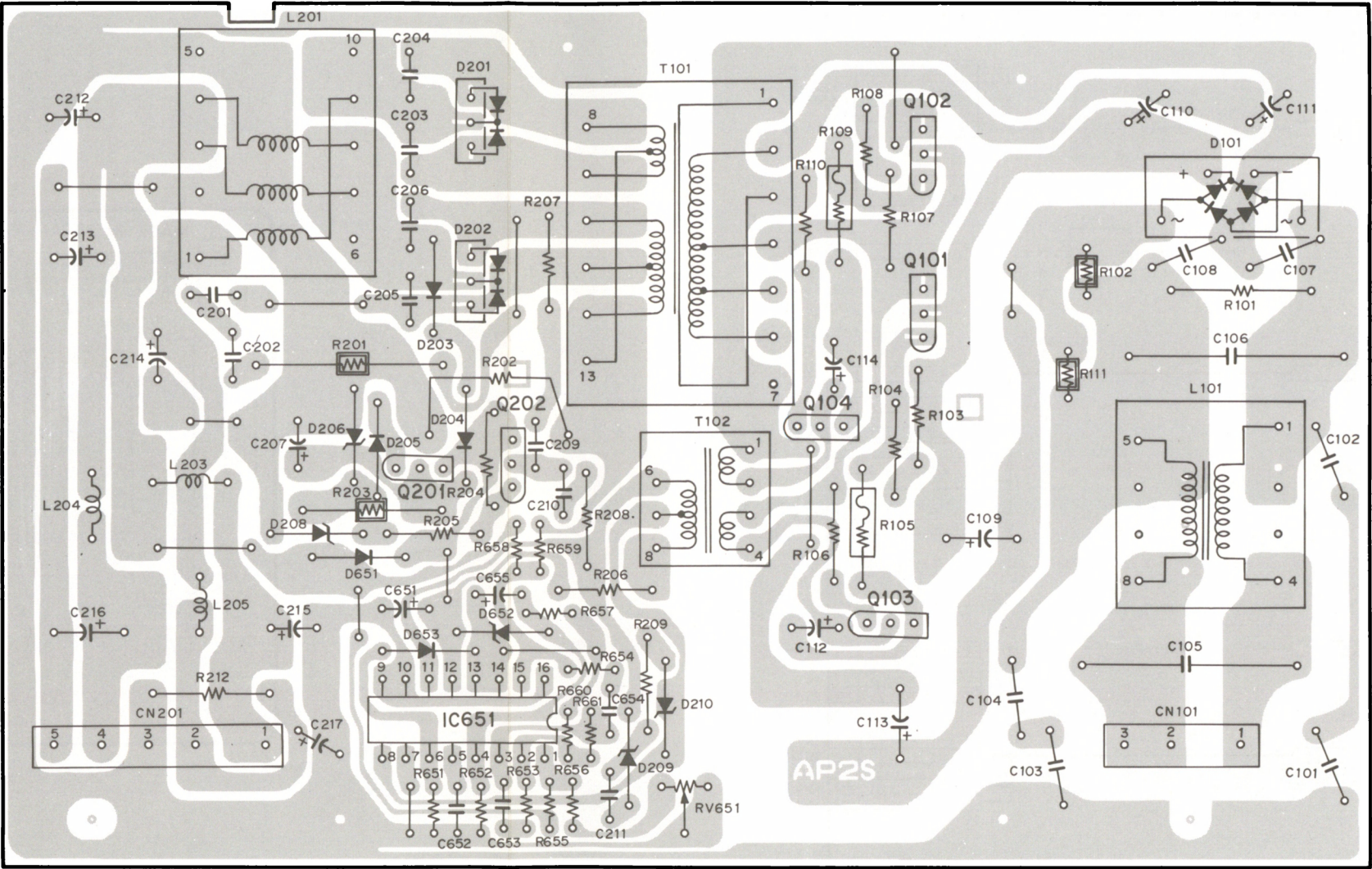
NOTE;

The shaded and △-marked components are critical to safety.
Replace only with same components as specified.



DC-31B
-COMPONENT SIDE-
1-622-221-31
VP-7000
VP-7000PM

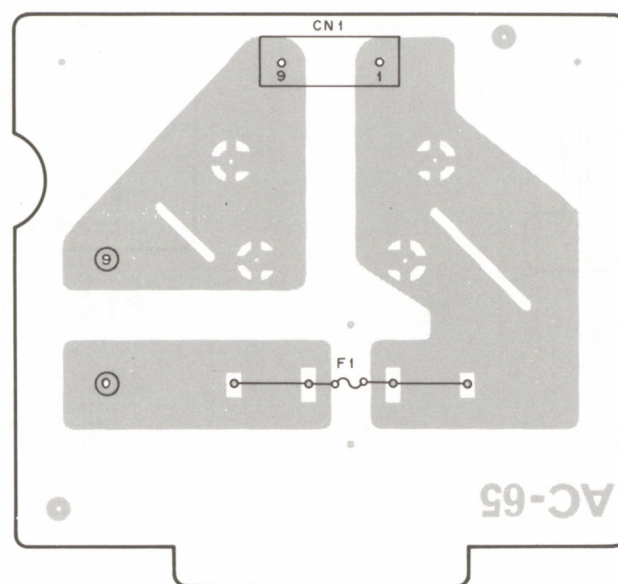
UR-14:SWITCHING REGURATOR



UR-14 -SOLDERING SIDE-
1-618-009-12
 VO-9600
 VP-9000
 VP-7000



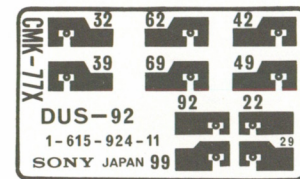
AC-65:AC INPUT



AC-65 - SOLDERING SIDE -
1-618-591-11
VO-9600
VP-9000
VP-7000
VP-7000PM

DUS-92:AUDIO CTL HEAD
DUS-147:AUDIO CTL HEAD
PT-9:REEL MOTOR DRIVER

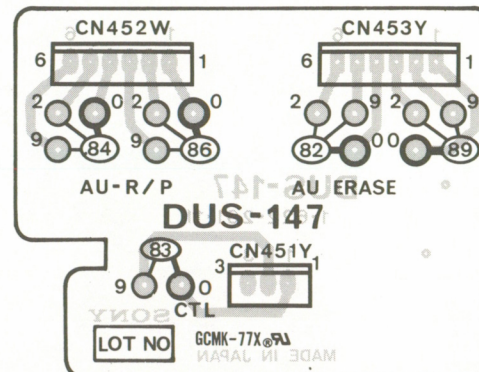
EC-28:CTL HEAD
LM-13:THREADING MOTOR
PTC-33:FR STOP DETECTOR
PTC-34:UNTHREAD END DETECTOR



DUS-92

-SOLDERING SIDE-

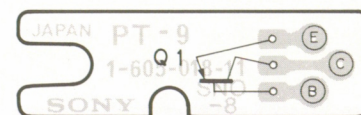
1-615-924-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



DUS-147

-COMPONENT SIDE-

1-622-261-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P

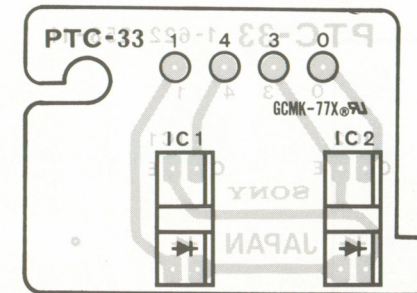


PT-9

-SOLDERING SIDE-

1-605-018-11

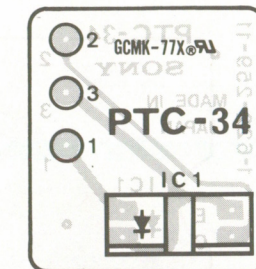
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



PTC-33

-COMPONENT SIDE-

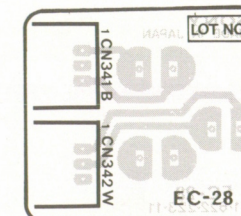
1-622-258-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



PTC-34

-COMPONENT SIDE-

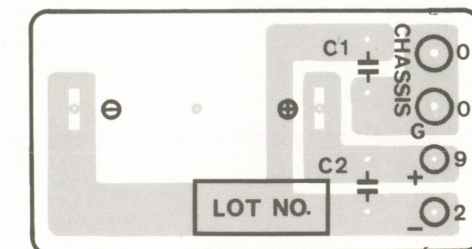
1-622-259-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



EC-28

-COMPONENT SIDE-

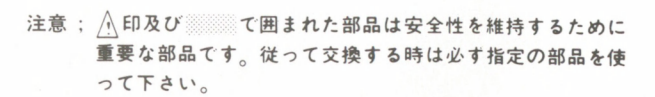
1-622-223-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



LM-13

-COMPONENT SIDE-

1-618-600-11
VO-9600 VP-7000
VO-9600P VP-7030
VP-9000 VP-7000PM
VP-9000P



The shaded and ⚠-marked components are critical to safety.

Replace only with same components as specified.

SECTION 15

SPARE PARTS AND FIXTURE

15-1. PARTS INFORMATION

(1)

The shaded and -marked components are critical to safety.

Replace only with same components as specified.

- (2) Replacement Parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to "improved parts and/or engineering changes" or "standardization of genuine parts". This manual's exploded views and electrical spare parts list indicate the part numbers of "the standardized genuine parts at the present". Regarding engineering part changes by the engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.
- (4) Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- (5) (T) after a spring description is shown on the exploded views in order to indicate the number of spring turns required for the use. (Example) Spring, tension (24T); This spring must be cut at its 24th turn for actual use.

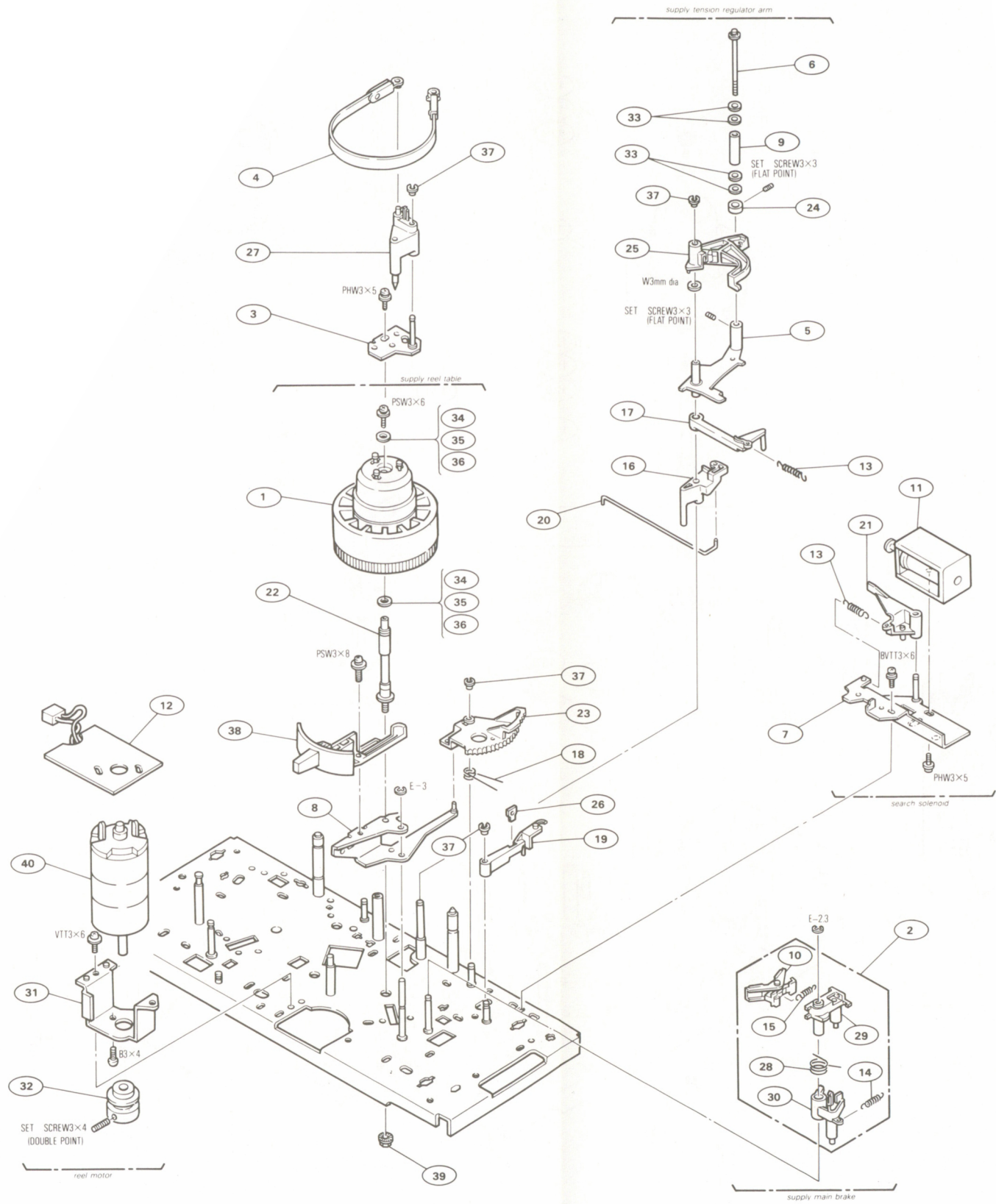
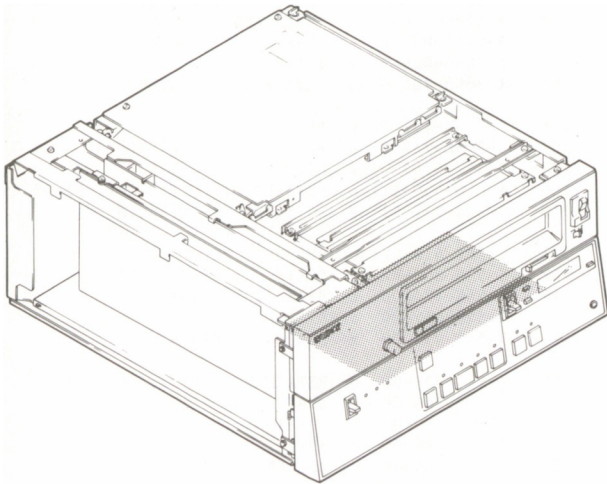
15-2. EXPLODED VIEW

. Exploded views are composed of the following blocks.

- (1) Reel Chassis (1), Supply Side
S Reel Table
S Tension Regulator Arm
Search Solenoid
S Main Brake
Reel Motor
- (2) Reel Chassis (2), Take-up Side
T Reel Table
FF/REW Idler
T Main brake
T Tension Regulator Arm
R Brake
- (3) Reel Chassis (3), Back Side
S Idler Solenoid
T Idler Solenoid
FF/REW Idler Pulley
S Brake Solenoid
T Brake Solenoid
- (4) Threading Ring Block
Threading Ring
Gear Box
T Correction Guide
Tape Beginning Sensor
FR Detector
- (5) Threading Arm
T Drawer Arm
S Drawer Arm
S Drawer Roller
Drawer Lever
- (6) Drum and Capstan Blocks
Head Drum
Capstan Motor
Audio/ CTL Head
Tape Guides

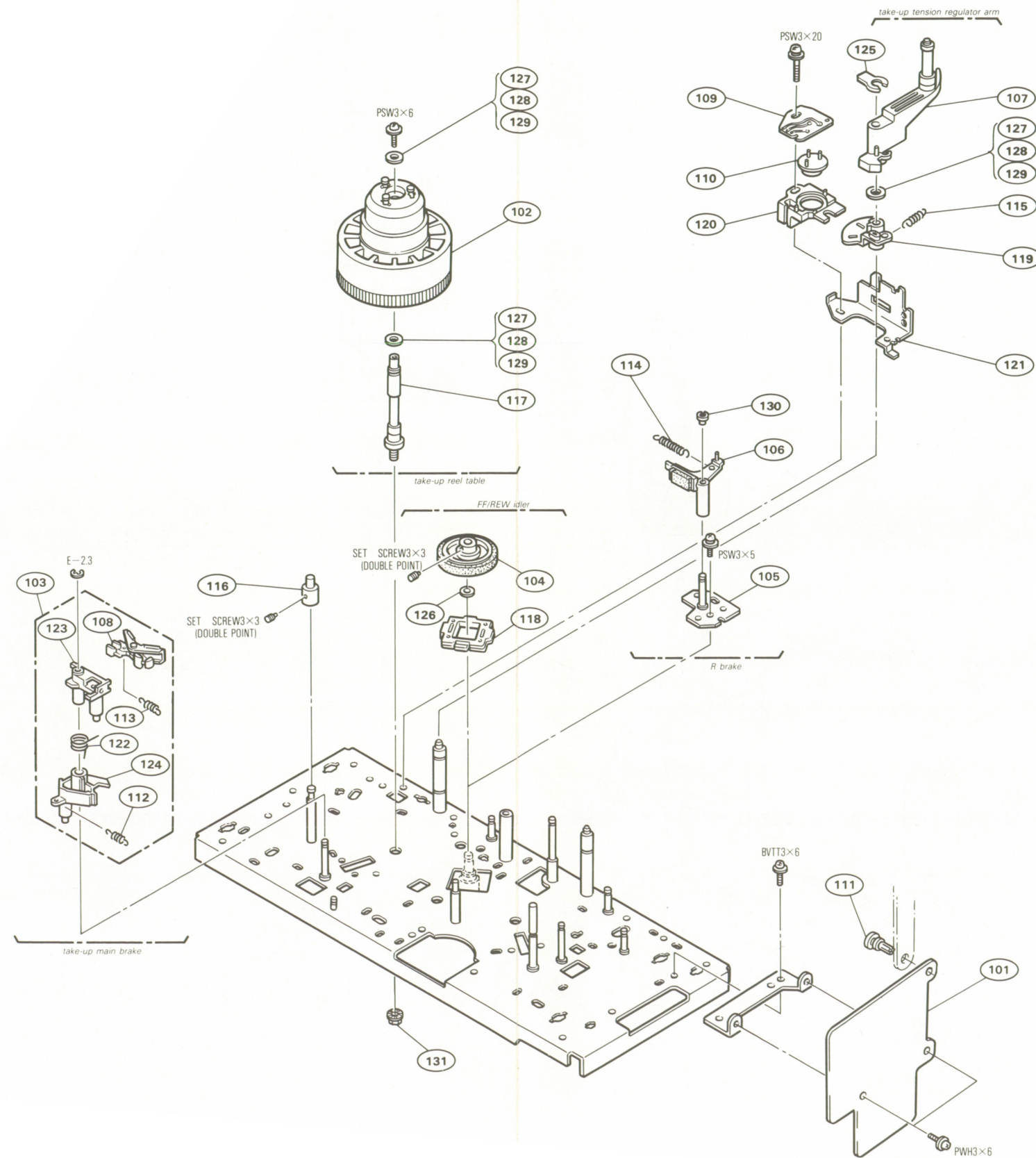
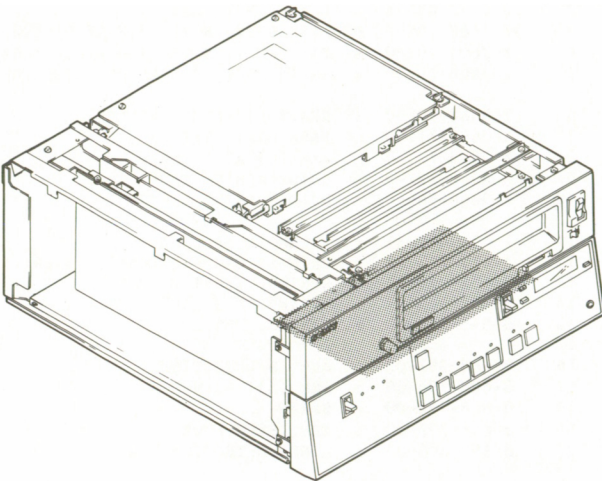
- | | |
|---|-----------------------------------|
| (7) Erase Head Base | (12) Chassis Block (1), Left Side |
| Erase Head Base | Printed Circuit Boards |
| S Guard | (13) Chassis Block (2), Back Side |
| (8) Pinch Lever and Pinch Solenoid Blocks | Printed Circuit Boards |
| Pinch Lever | Connector Panel for Video Signal |
| Pinch Roller Pre-set Cam | (14) Level Control Panel |
| Pinch Solenoid | Meter Panel |
| (9) Cassette-up Compartment Block | Headphone Block |
| (10) Function Control | (15) Switching Regulator |
| Function Control Board | (16) Connector Panel |
| (11) Front Panel Block | (17) Chassis Block (3), Bottom |
| Ornamental Front Panel | Printed Circuit Boards |
| Key Top | (18) Ornamental Panel Block |
| | U Case |
| | Bottom Plate |

REEL CHASSIS (1), SUPPLY SIDE



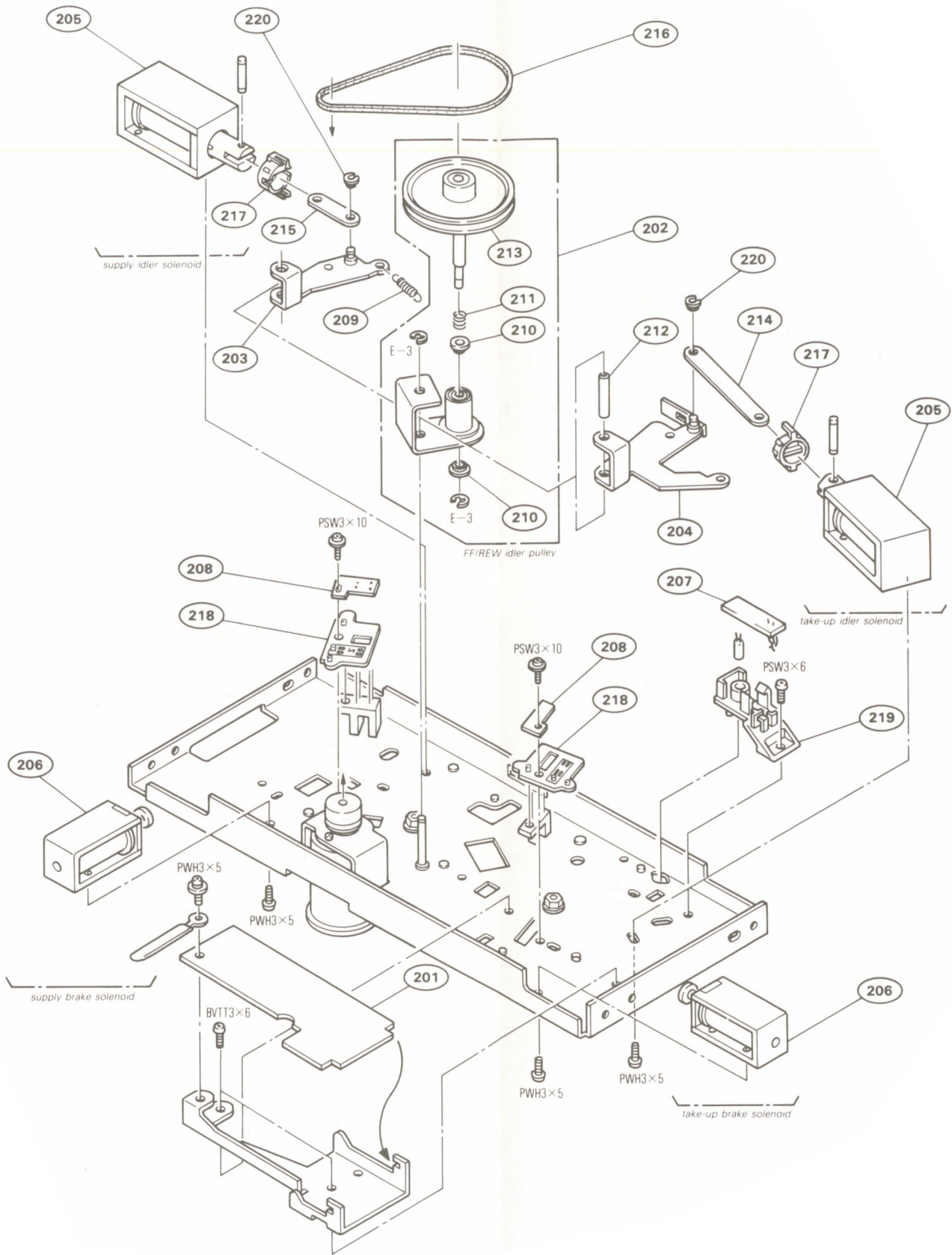
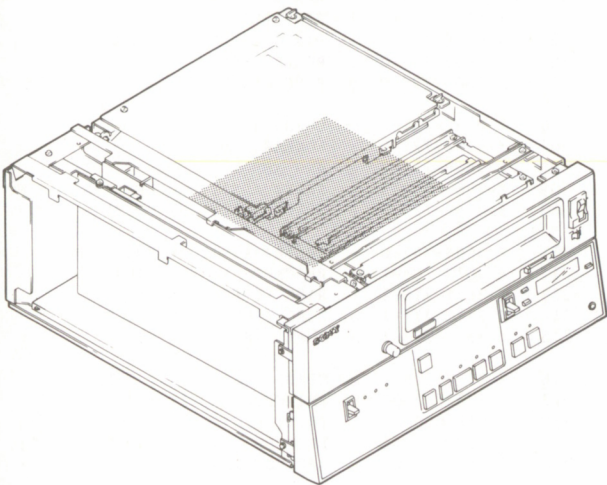
No.	Part No.	SP	Description
1	A-6739-016-C	s	TABLE ASSY, REEL
2	A-6741-038-B	s	BRAKE ASSY, MAIN
3	X-3668-706-0	o	BASE ASSY, S TENSION REGULATOR
4	X-3668-707-0	s	BAND ASSY, S TENSION REGULATOR
5	X-3668-708-0	s	ARM(A)ASSY, S TENSION REGULATOR
6	X-3668-709-0	s	SHAFT (1) ASSY, ROLLER
7	X-3668-717-0	o	BASE ASSY, SEARCH
8	X-3668-725-0	o	ARM (C) ASSY, SKEW
9	X-3668-727-0	s	GUIDE ASS'Y, TAPE
10	X-3668-749-0	s	HOLDER ASSY, LINING
11	1-454-417-31	s	SOLENOID, PLUNGER
12	1-618-873-11	o	PRINTED CIRCUIT BOARD, RM-39
13	3-534-238-XX	s	SPRING, TENSION (23T)
14	3-535-369-XX	s	SPRING, TENSION (12T)
15	3-548-124-00	s	SPRING, TENSION
16	3-668-787-02	s	ARM, S DETECTION
17	3-668-794-00	o	ARM (A), SKEW
18	3-668-795-00	s	SPRING
19	3-668-797-00	o	ARM, SKEW LOCK
20	3-668-804-00	s	LINK, DETECTION TENSION
21	3-668-808-00	s	ARM, FWD, SEARCH
22	3-668-827-00	o	SHAFT (S), REEL
23	3-668-835-00	s	ARM (B), SKEW
24	3-668-874-00	s	FLANGE (1), LOWER
25	3-668-936-00	s	ARM (B), S TENSION REGULATOR
26	3-668-937-00	s	CLAW, SKEW LOCK
27	3-668-939-00	o	ARM, BAND LOCK
28	3-668-966-00	s	SPRING
29	3-668-970-00	o	ARM, BRAKE
30	3-668-971-00	o	ARM, BRAKE RELEASE
31	3-672-743-01	o	BRACKET, MOTOR
32	3-672-744-01	s	PULLEY (R), MOTOR
33	3-701-438-01	s	WASHER, POLY 2.5MM DIA., 0.25T
34	3-701-444-01	s	WASHER, POLY 6MM DIA., 0.13T
35	3-701-444-11	s	WASHER, POLY 6MM DIA., 0.25T
36	3-701-444-21	s	WASHER, POLY 6MM DIA., 0.50T
37	3-703-074-00	s	CAP 3, SHAFT
38	3-718-337-01	s	LEVER, SKEW
39	4-304-749-00	o	NUT, FLANGE
40	8-835-178-01	s	MOTOR, DC FN30-T26N1E

REEL CHASSIS (2), TAKE-UP SIDE



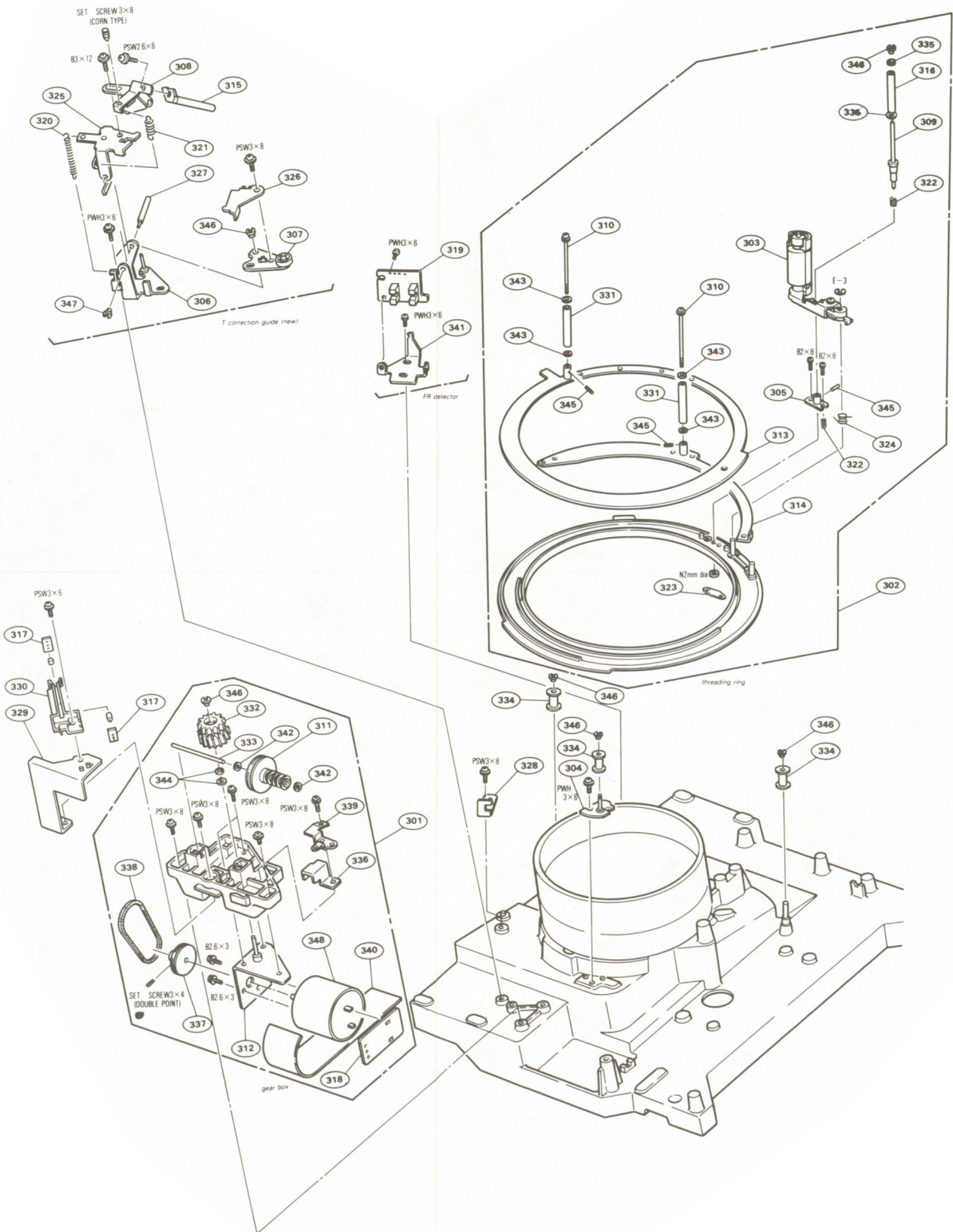
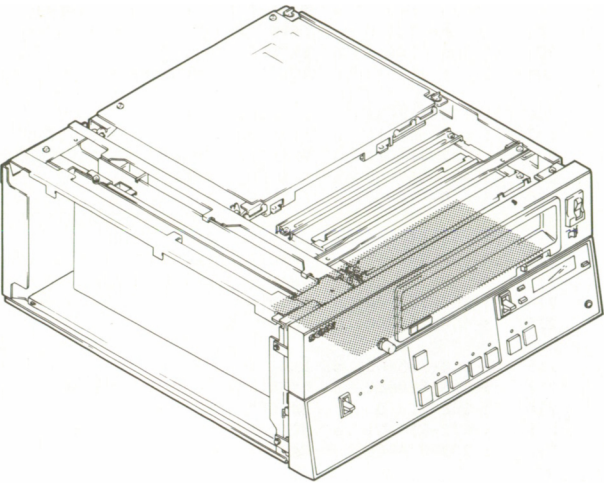
No.	Part No.	SP	Description
101	A-6725-569-A	o	MOUNTED CIRCUIT BOARD, PD-40
102	A-6739-016-C	s	TABLE ASS'Y, REEL
103	A-6741-038-B	s	BRAKE ASS'Y, MAIN
104	X-3646-026-0	s	IDLER ASS'Y, FF
105	X-3668-705-0	o	BASE ASS'Y, R BRAKE
106	X-3668-737-0	s	BRAKE ASS'Y, R
107	X-3668-738-0	s	ARM ASS'Y, T TENSION REGULATOR
108	X-3668-749-0	s	HOLDER ASS'Y, LINING
109	1-618-599-11	o	PRINTED CIRCUIT BOARD, SE-46
110	1-806-232-21	s	DETECTOR MB-1102/S.N
111	2-382-416-01	o	SUPPORT, PC
112	3-535-369-XX	s	SPRING, TENSION (12T)
113	3-548-124-00	s	SPRING, TENSION
114	3-549-861-00	s	SPRING, TENSION
115	3-642-427-00	s	SPRING, TENSION
116	3-668-031-00	o	RETAINER (UPPER), CASSETTE
117	3-668-766-00	o	SHAFT (T), REEL
118	3-668-780-00	o	CUSHION, IDLER
119	3-668-788-00	s	ART, T DETECTION
120	3-668-789-00	o	HOLDER, BRIDGE, PHOTO
121	3-668-798-00	o	STOPPER, T TENSION REGULATOR
122	3-668-966-00	s	SPRING
123	3-668-970-00	o	ARM, BRAKE
124	3-668-971-00	o	ARM, BRAKE RELEASE
125	3-672-708-00	o	STOPPER, T TENSION REGULATOR
126	3-701-441-21	s	WASHER, POLY 4MM DIA., 0.50T
127	3-701-444-01	s	WASHER, POLY 6MM DIA., 0.13T
128	3-701-444-11	s	WASHER, POLY 6MM DIA., 0.25T
129	3-701-444-21	s	WASHER, POLY 6MM DIA., 0.50T
130	3-703-074-00	s	CAP 3, SHAFT
131	4-304-749-00	o	NUT, FLANGE

REEL CHASSIS (3), BACK SIDE



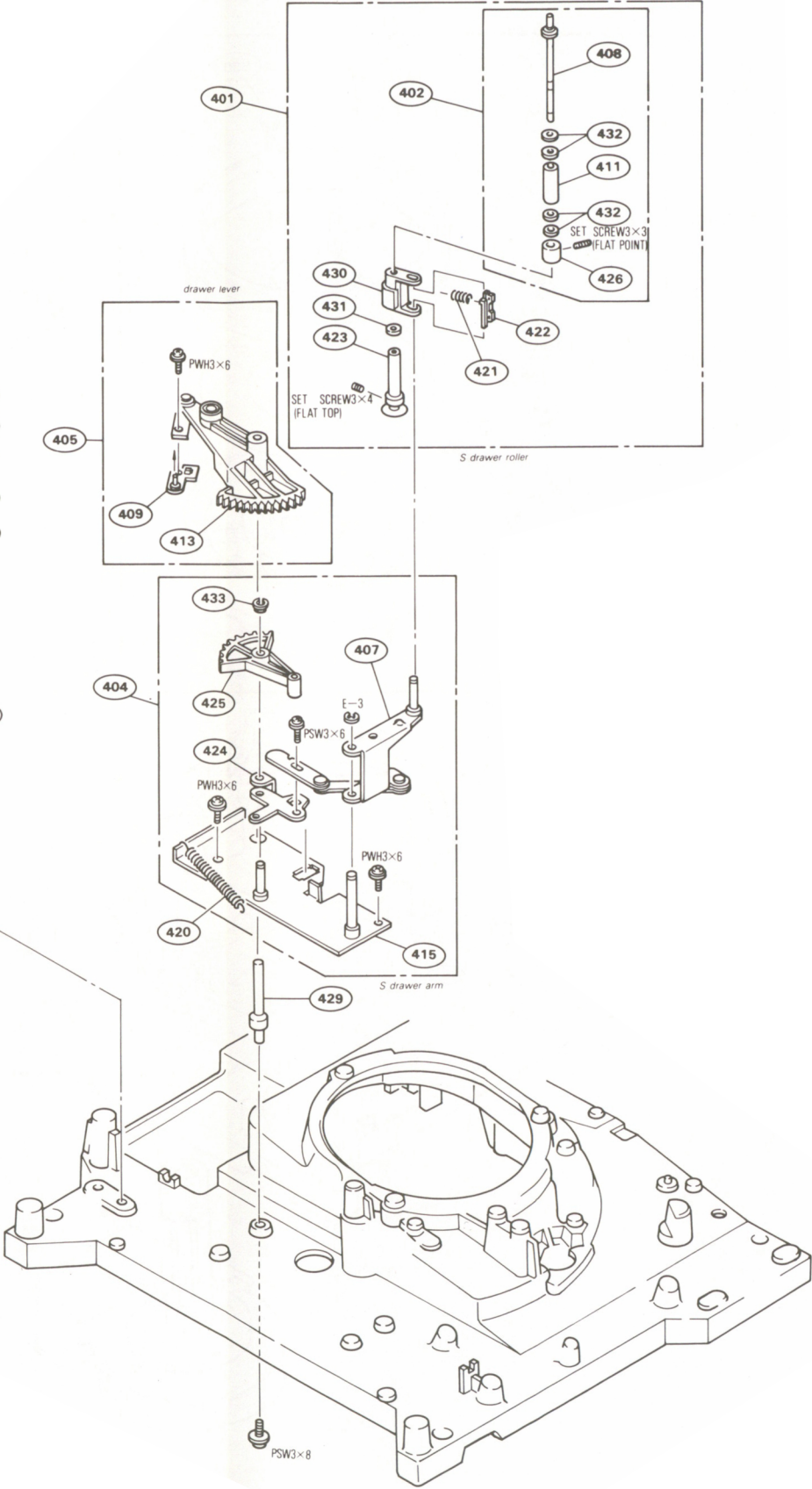
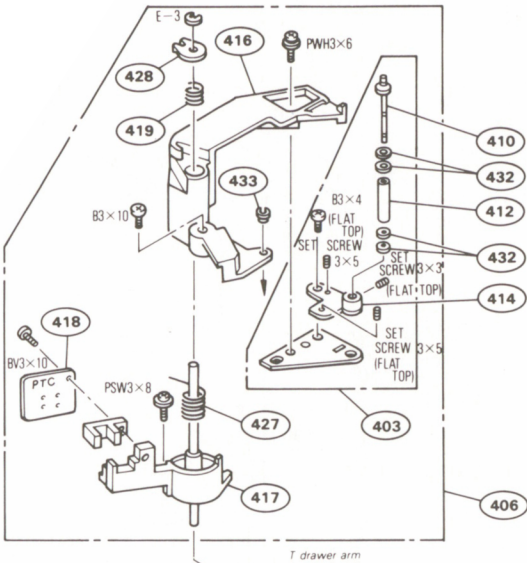
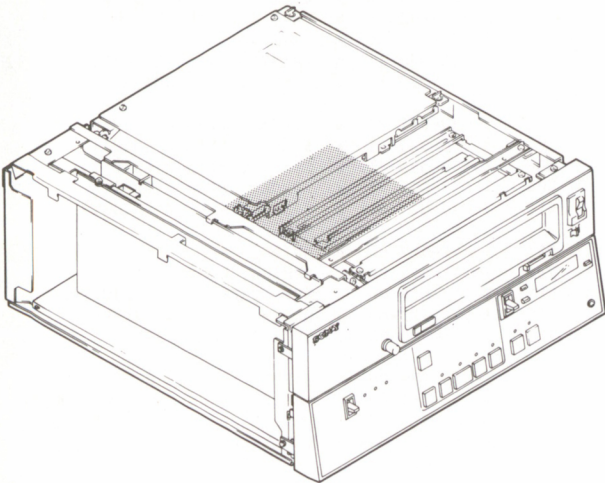
No.	Part No.	SP	Description
201	A-6725-570-A	o	MOUNTED CIRCUIT BOARD, PD-41
202	A-6740-069-B	s	PULLEY BLOCK, ASS'Y, IDLER
203	X-3668-703-0	o	LEVER ASS'Y, S
204	X-3668-704-0	o	LEVER ASS'Y, T
205	1-454-415-11	s	SOLENOID, PLUNGER
206	1-454-417-31	s	SOLENOID, PLUNGER
207	1-618-597-11	o	PRINTED CIRCUIT BOARD, TG-22
208	1-622-218-11	o	PRINTED CIRCUIT BOARD, PTC-35
209	3-437-452-00	s	SPRING, TENSION
210	3-650-512-00	s	COLLAR, (A)
211	3-651-572-00	s	SPRING, COMPRESSION
212	3-668-048-11	o	SPACER (DIA. 4x20)
213	3-668-772-00	s	SHAFT, IDLER PULLEY
214	3-668-781-00	o	JOINT, T
215	3-668-782-00	o	JOINT, S
216	3-668-785-00	s	BELT (67x2)
217	3-668-826-00	s	RETAINER, PIN, SOLENOID
218	3-668-828-02	o	BRACKET, PS
219	3-672-752-01	o	HOLDER, LED
220	3-703-074-00	s	CAP 3, SHAFT

THREADING RING BLOCK



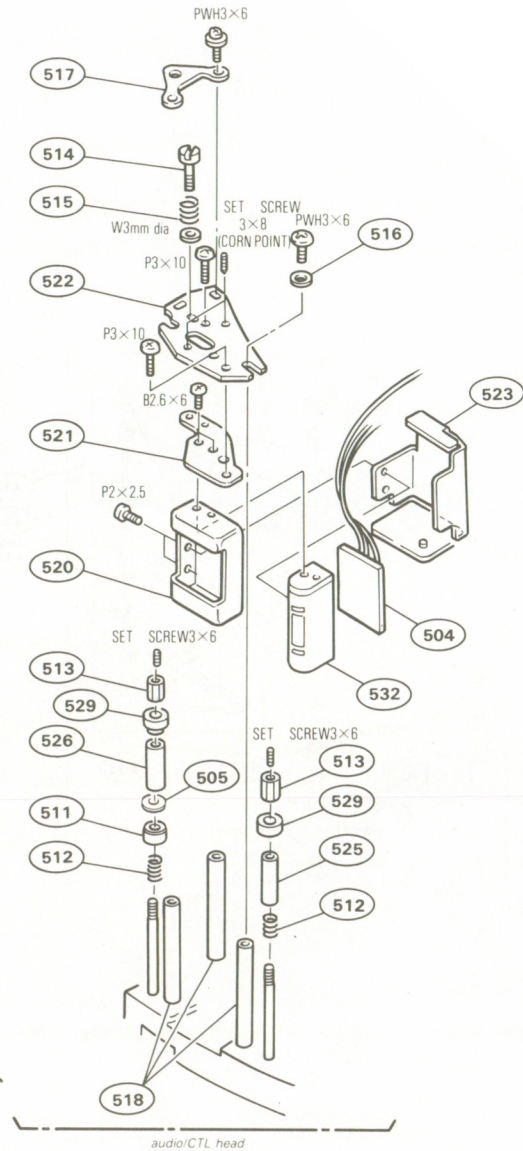
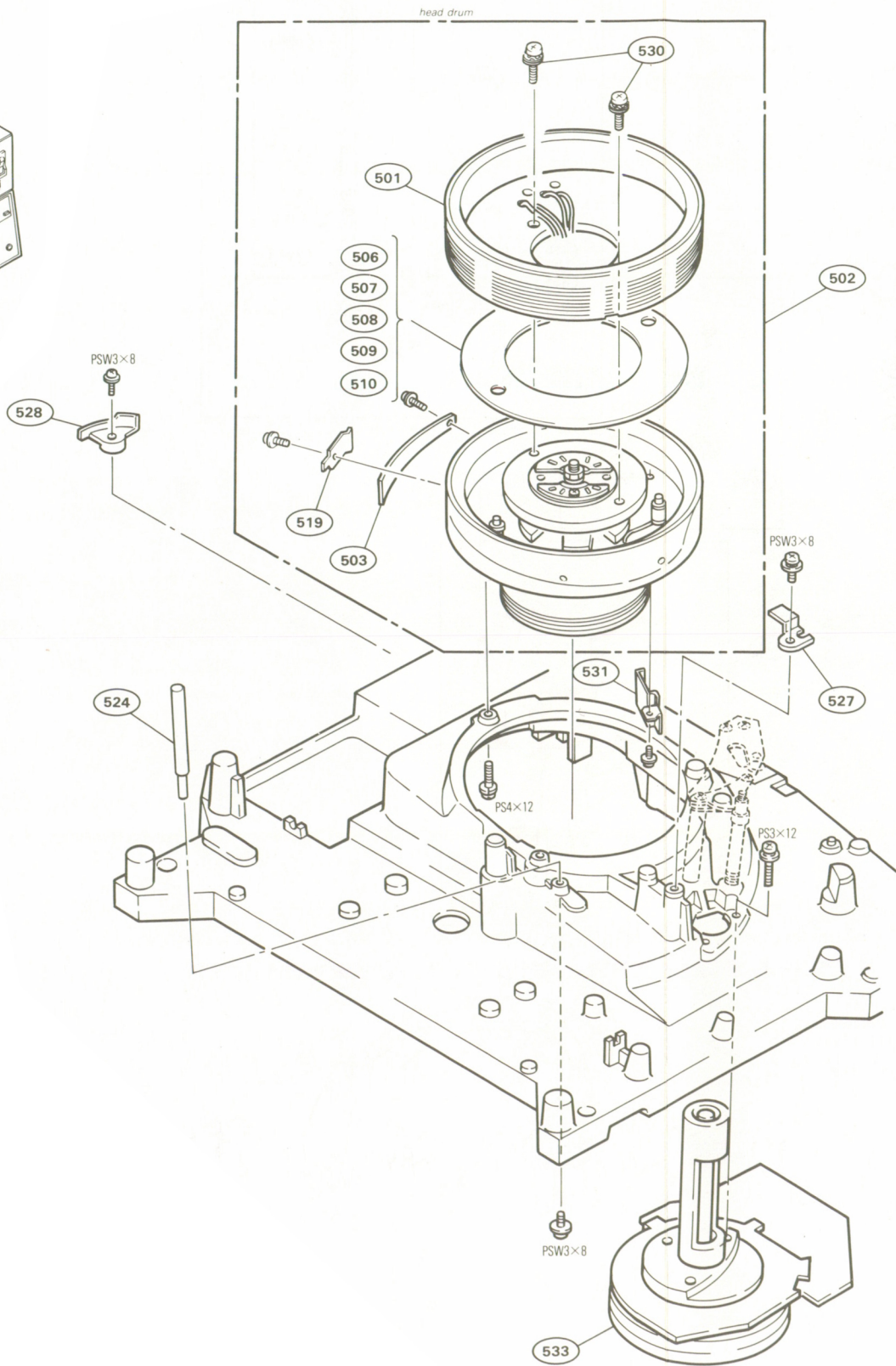
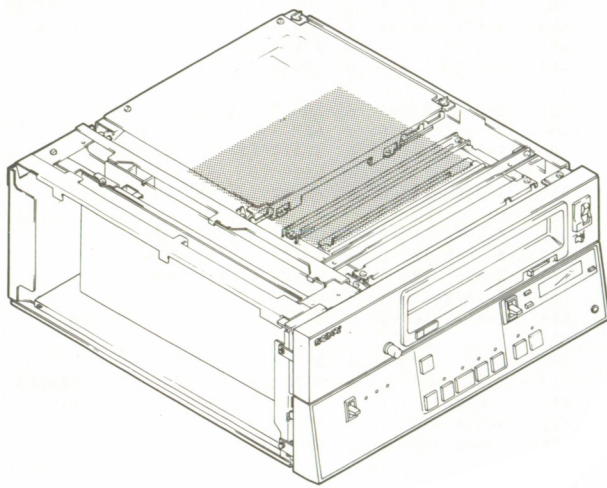
No.	Part No.	SP	Description
301	A-6750-219-A	s	BOX BLOCK ASS'Y, GEAR
302	A-6750-220-A	s	RING BLOCK ASS'Y, MAIN
303	A-6750-226-A	s	PINCH ROLLER BLOCK ASS'Y
304	X-3668-719-0	o	ROLLER ASS'Y, RING
305	X-3668-720-0	o	BASE ASS'Y, ROLLER, PRECEDING
306	X-3668-721-0	o	CHASSIS ASS'Y, GUIDE
307	X-3668-722-0	s	LOCKER ASS'Y, FR
308	X-3668-723-2	o	ARM ASS'Y, GUIDE, T CORRECTION
309	X-3668-724-3	s	SHAFT ASS'Y, ROLLER, PRECEDING
310	X-3668-733-0	s	SHAFT ASS'Y, SR GUIDE
311	X-3668-743-0	s	PULLEY ASS'Y, WORM
312	X-3672-704-1	o	BRACKET ASS'Y, MOTOR
313	X-3672-710-1	o	RING (UPPER) ASS'Y, SUB
314	X-3672-711-1	o	RING (LOWER) ASS'Y, SUB
315	X-3672-718-2	s	SHAFT ASS'Y, GUIDE
316	X-3718-303-1	s	GUIDE ASS'Y, (T), TAPE
317	1-603-737-00	o	PRINTED CIRCUIT BOARD, PH-5
318	1-618-600-11	o	PRINTED CIRCUIT BOARD, LM-13
319	1-622-258-11	o	PRINTED CIRCUIT BOARD, PTC-33
320	3-143-067-00	s	SPRING, TENSION
321	3-437-289-00	s	SPRING, TENSION
322	3-634-196-00	s	SPRING
323	3-668-743-00	o	NUT, PLATE, ROLLER, PRECEDING
324	3-668-745-00	s	SPRING
325	3-668-749-02	o	ARM (A), GUIDE, T CORRECTION
326	3-668-753-00	o	PLATE, ADJUSTMENT, FR LOCKER
327	3-668-754-00	o	SHAFT, GUIDE ARM, T CORRECTION
328	3-668-755-00	o	PLATE, STOPPER SR
329	3-668-900-00	o	BRACKET, T SENSOR
330	3-668-901-00	s	HOLDER, T PHOTO
331	3-668-919-00	s	ROLLER, SR GUIDE
332	3-668-947-00	s	PINION, L
333	3-668-948-00	o	SHAFT WORM
334	3-668-963-00	s	ROLLER, RING
335	3-669-926-01	s	WASHER (3), THRUST
336	3-669-960-00	o	RETAINER, SHAFT
337	3-672-736-01	s	PULLEY, LM
338	3-672-737-01	s	BELT SQUARE
339	3-672-738-01	o	PLATE GROUND SLED
340	3-672-739-01	o	BELT, LM SHIELD
341	3-672-790-01	o	BRACKET, FR DETECTION
342	3-701-437-21	s	WASHER, POLY 2MM DIA., 0.50T
343	3-701-438-11	s	WASHER, POLY 2.5MM DIA., 0.25T
344	3-701-439-21	s	WASHER, POLY 3MM DIA., 0.50T
345	3-701-505-00	s	SET SCREW, DUBLE POINT 3x3
346	3-703-074-00	s	CAP 3, SHAFT
347	3-703-075-00	s	CAP 2, SHAFT
348	8-835-055-01	s	MOTOR, DC (DNR-4700A)

THREADING ARM



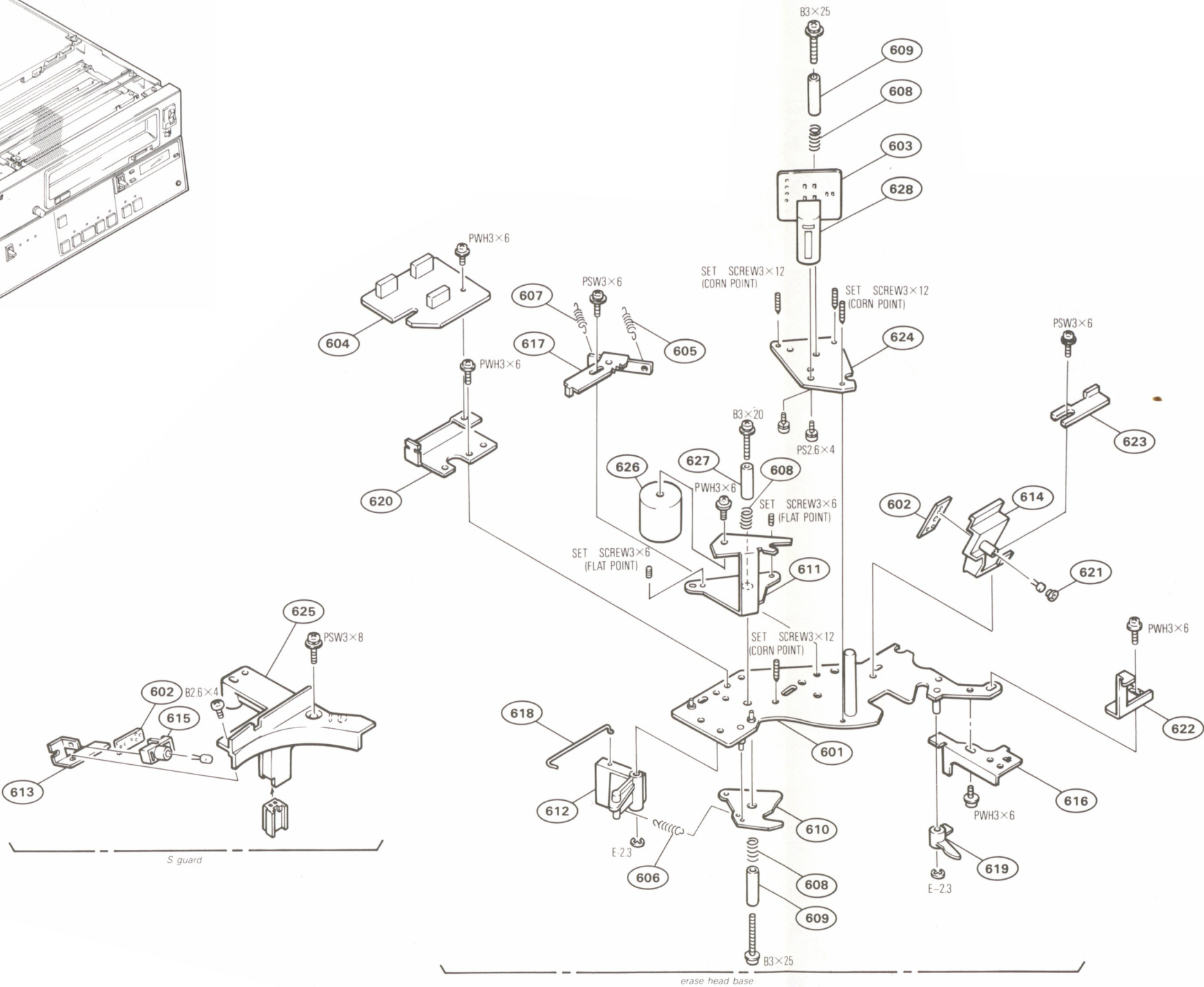
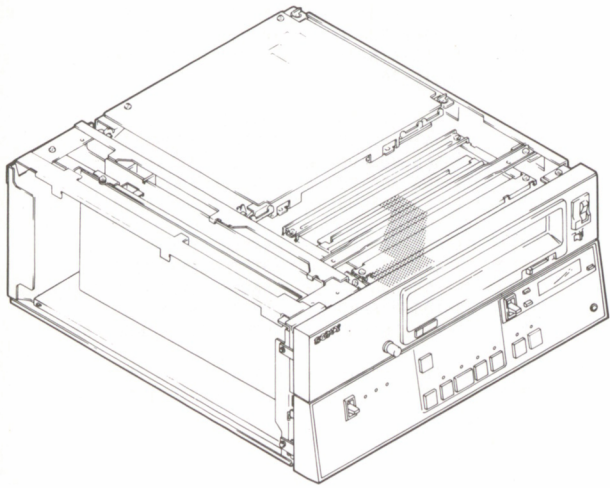
No.	Part No.	SP	Description
401	A-6746-021-C	s	ROLLER BLOCK ASS'Y, S DRAWER
402	A-6746-034-A	s	ROLLER BLOCK ASS'Y, (2) DRAWER
403	A-6746-045-A	s	ROLLER BLOCK ASS'Y, T GUIDE
404	A-6750-201-A	o	ARM BLOCK ASS'Y, S DRAWER
405	A-6750-202-A	o	LEVER BLOCK ASS'Y, DRAWER
406	A-6750-218-A	o	ARM BLOCK ASS'Y, T DRAWER
407	X-3668-711-0	o	ARM ASS'Y, S DRAWER
408	X-3668-712-3	s	SHAFT (2) ASS'Y, ROLLER
409	X-3668-713-0	o	LINK (B) ASS'Y, DRIVING
410	X-3668-716-0	s	SHAFT (3) ASS'Y, ROLLER
411	X-3668-718-0	s	GUIDE ASS'Y, TAPE
412	X-3668-727-0	o	GUIDE ASS'Y, TAPE
413	X-3668-729-0	s	LEVER ASS'Y, DRAWER
414	X-3672-705-1	o	PLATE ASS'Y, GUIDE, T
415	X-3672-706-1	o	BASE ASS'Y, S DRAWER ARM
416	X-3672-708-1	o	ARM ASS'Y, T DRAWER
417	X-3718-305-1	o	RITAINER ASS'Y, ARM, T DRAWER
418	1-622-259-11	o	PRINTED CIRCUIT BOARD, PTC-34
419	3-534-854-00	s	SPRING, COMPRESSION
420	3-540-506-00	s	SPRING, TENSION
421	3-644-718-00	s	SPRING, COMPRESSION
422	3-668-718-00	s	RETAINER, SPRING, S DRAWER
423	3-668-719-00	s	HOLDER (L), S GUIDE
424	3-668-720-00	o	LIMITER, S DRAWER
425	3-668-721-00	s	ARM, S DRIVING
426	3-668-724-00	o	FLANGE (2), LOWER
427	3-668-734-00	o	SPRING
428	3-668-735-00	s	RETAINER, SPRING
429	3-668-760-00	s	SHAFT, DRAWER LEVER
430	3-668-833-00	s	HOLDER (M), GUIDE, S
431	3-669-946-00	s	RING (P4), O
432	3-701-438-01	s	WASHER, POLY 2.5MM DIA., 0.13T
433	3-703-074-00	s	CAP 3, SHAFT

DRUM AND CAPSTAN BLOCKS



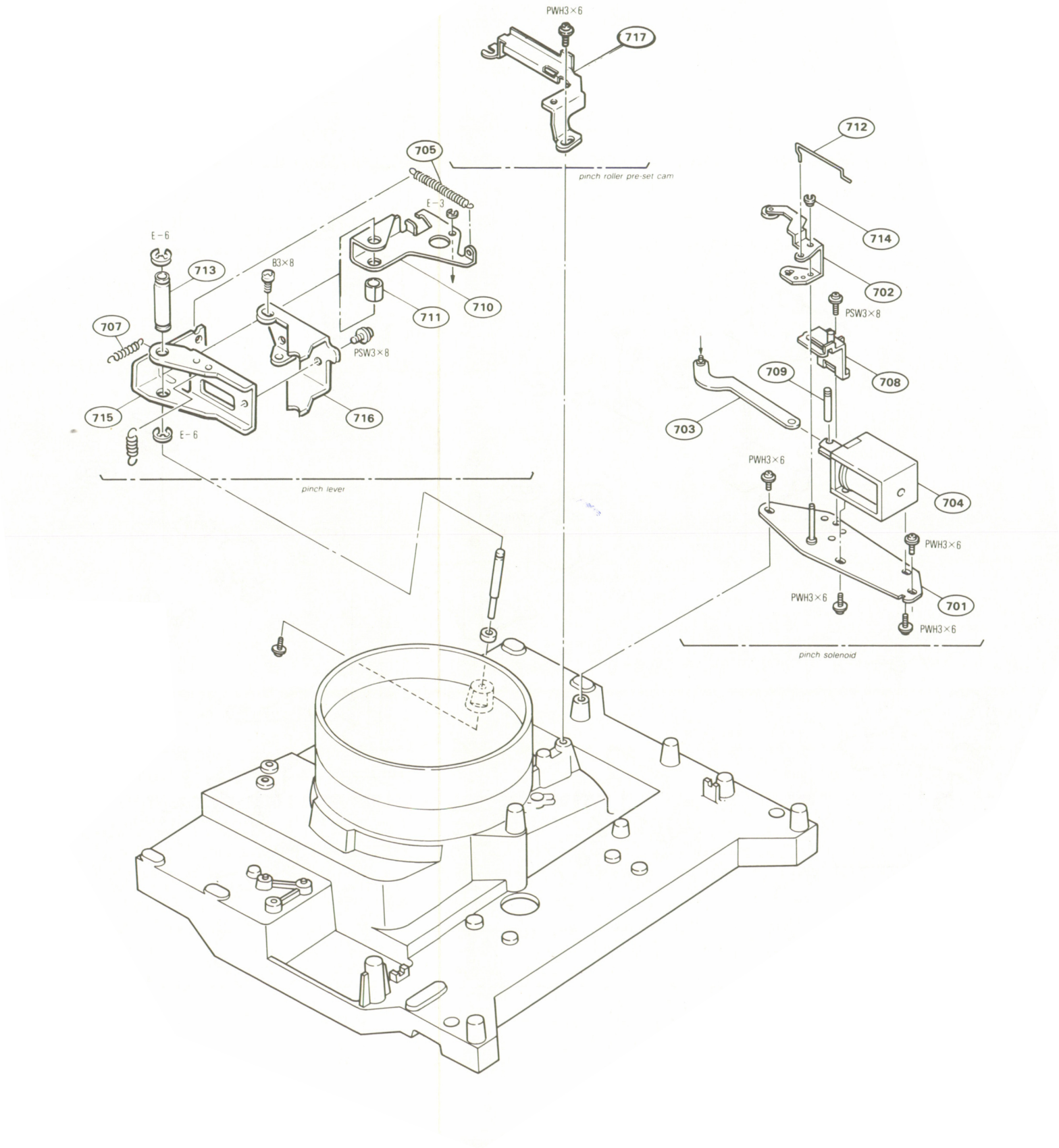
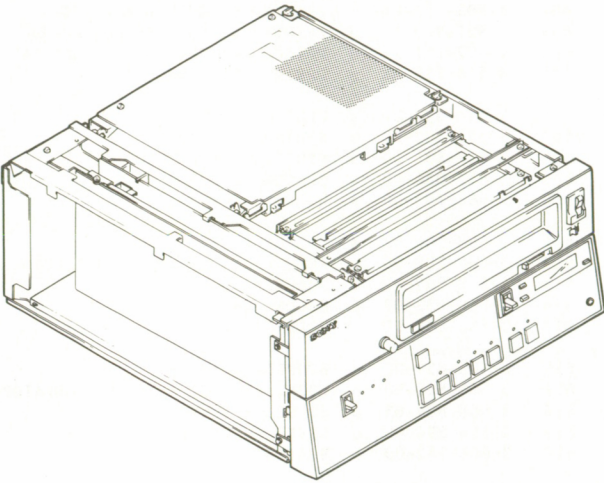
No.	Part No.	SP	Description
501	A-6709-560-A	s	UPPER DRUM ASS'Y, DUR-37-R
502	A-6709-603-A	s	HEAD DRUM ASS'Y, DUH-37B-R
503	1-586-633-00	s	DETECTOR, DEW
504	1-615-924-11	o	PRINTED CIRCUIT BOARD, DUS-92
505	3-534-329-11	s	WASHER, TAPE GUIDE
506	3-630-029-01	s	SPACER, FLANGE (0.01T)
507	3-630-029-11	s	SPACER, FLANGE (0.02T)
508	3-630-029-21	s	SPACER, FLANGE (0.05T)
509	3-630-029-31	s	SPACER, FLANGE (0.1T)
510	3-630-029-41	s	SPACER, FLANGE (0.03T)
511	3-641-612-00	s	GUIDE, TAPE
512	3-641-615-00	s	SPRING, COMPRESSION
513	3-641-616-00	s	NUT, TAPE GUIDE ADJUSTMENT
514	3-641-621-00	s	SCREW, HEAD ADJUSTMENT
515	3-641-622-00	s	SPRING, COMPRESSION
516	3-645-076-00	o	WASHER, M-REEL S
517	3-647-815-00	o	PLATE, ADJUSTMENT, CTL HEAD
518	3-647-816-00	o	POLE, SUPPORT, CTL BRACKET
519	3-655-631-00	o	TERMINAL, GRUND
520	3-655-675-02	o	CASE (F), AU
521	3-655-676-01	o	BRACKET (A), CTL HEAD
522	3-655-677-01	o	BRACKET (B), CTL HEAD
523	3-655-678-03	o	CASE (B), AU
524	3-672-729-01	s	TG-2
525	3-672-730-01	s	TG-3
526	3-672-731-01	s	TG-4
527	3-672-762-01	o	PIN, DRUM
528	3-672-763-01	o	CAM, P OFFSET PREVENTION
529	3-688-807-01	s	FRANGE, TAPE GUIDE
530	3-703-467-01	s	SCREW
531	3-710-826-01	o	SHIELD, CN
532	8-825-578-41	s	HEAD, AUDIO PS264-5803
533	8-835-258-01	s	MOTOR, DC BHF-1915B

ERASE HEAD BASE



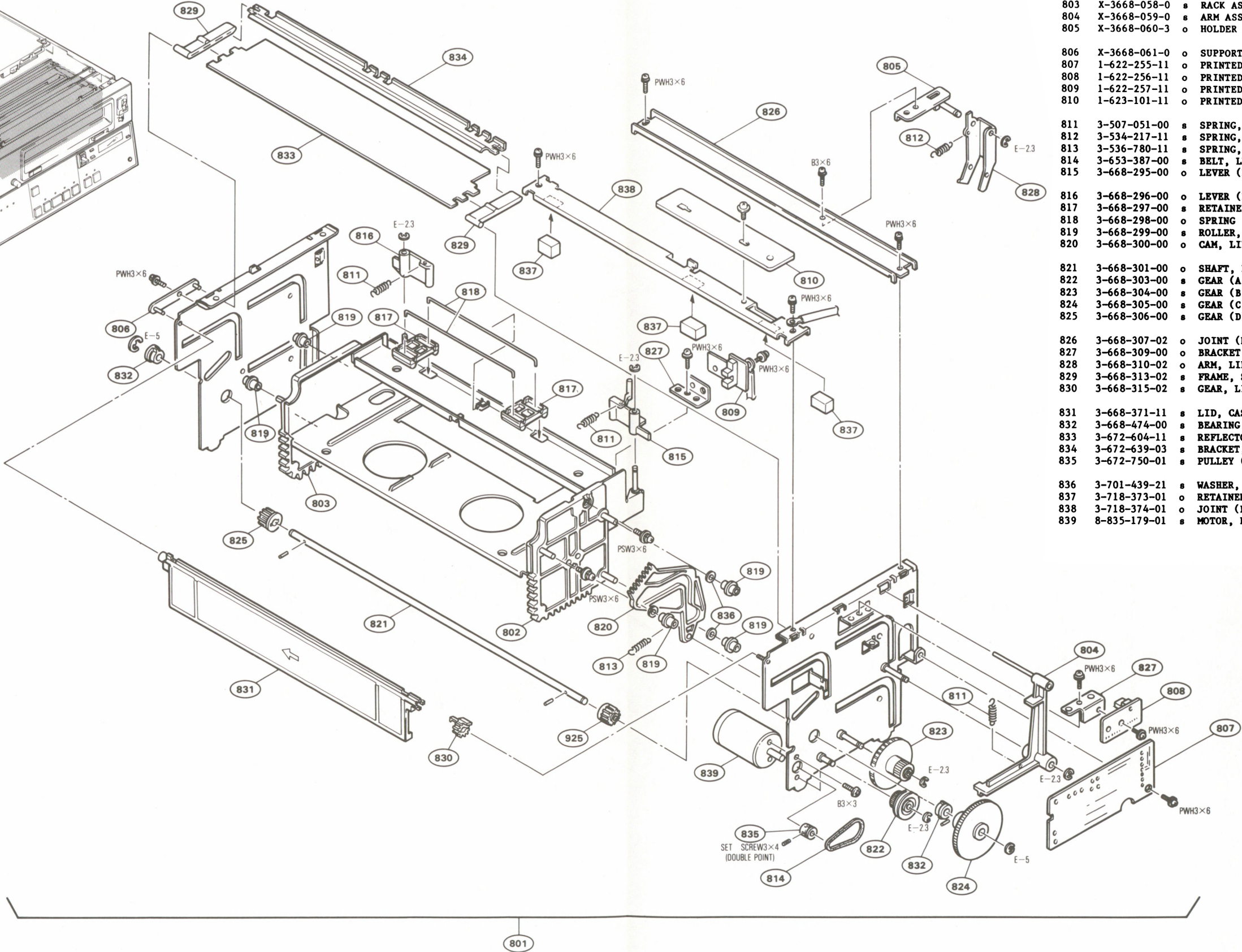
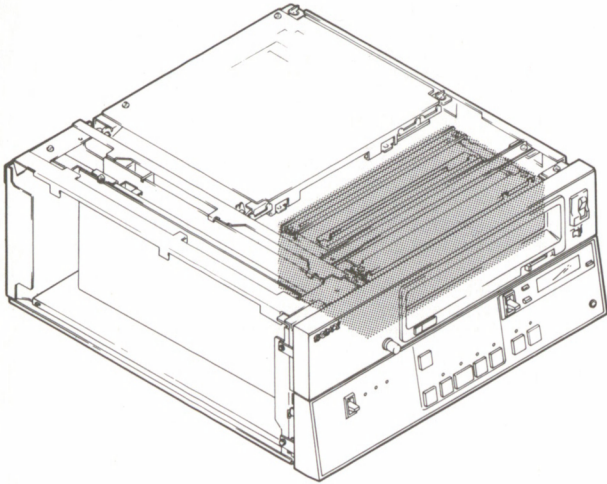
No.	Part No.	SP	Description
601	X-3668-728-0	o	DECK ASS'Y, E HEAD
602	1-603-737-00	o	PRINTED CIRCUIT BOARD, PH-5
603	1-622-223-11	o	PRINTED CIRCUIT BOARD, EC-28
604	1-622-261-11	o	PRINTED CIRCUIT BOARD, DUS-147
605	3-534-238-XX	s	SPRING, TENSION (23T)
606	3-535-531-00	s	SPRING, TENSION
607	3-538-102-00	s	SPRING, TENSION
608	3-637-335-00	s	SPRING, COMPRESSION (C)
609	3-657-086-00	o	SPACER (3x20)
610	3-668-705-00	s	HOLDER (LOWER), S
611	3-668-706-02	s	HOLDER (UPPER), S
612	3-668-708-00	o	ARM, DRIVING, CORRECTION GUIDE
613	3-668-809-02	o	BRACKET, HOLDER
614	3-668-832-02	o	HOLDER (S)
615	3-668-837-00	o	HOLDER, LED
616	3-668-859-00	o	STOPPER, RING
617	3-668-860-00	o	HOOK, SPRING, TENSION REGULATOR
618	3-668-884-03	o	JOINT, RESERVE PRESS
619	3-668-894-00	o	LEVER, RELEASE
620	3-668-962-00	o	BRACKET, AH PC BOARD
621	3-669-920-00	o	COVER, S PHOTO
622	3-669-963-00	o	SPRING, LEAF, GROUND
623	3-669-964-00	o	PLATE, GROUND
624	3-672-723-00	o	TABLE, HEAD, E
625	3-672-764-03	s	GUARD, S
626	3-718-417-01	o	BALANCER
627	4-855-006-11	s	SPACER (3x14)
628	8-825-514-20	s	HEAD, CTL (PP170-58)

PINCH LEVER AND PINCH SOLENOID BLOCKS



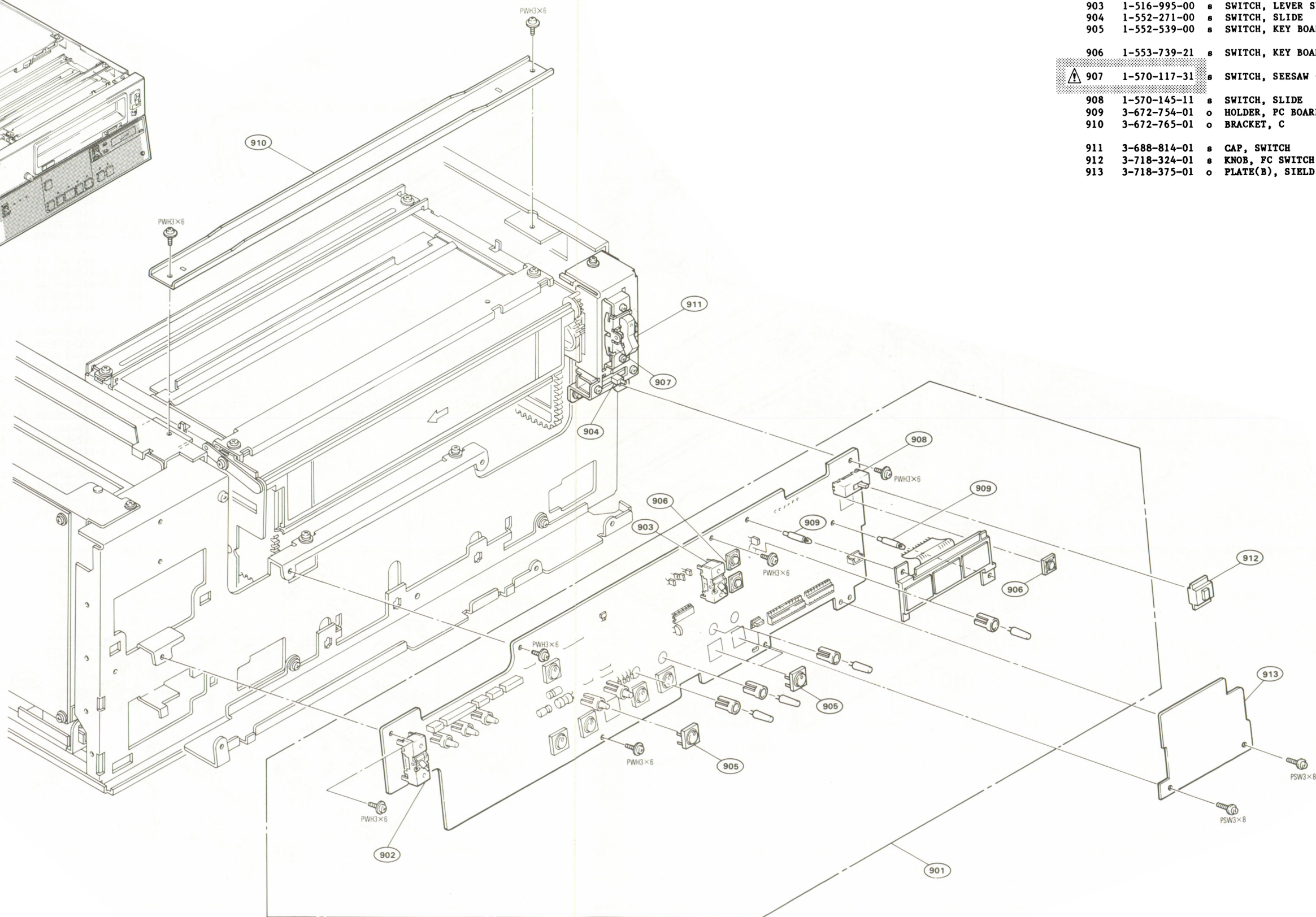
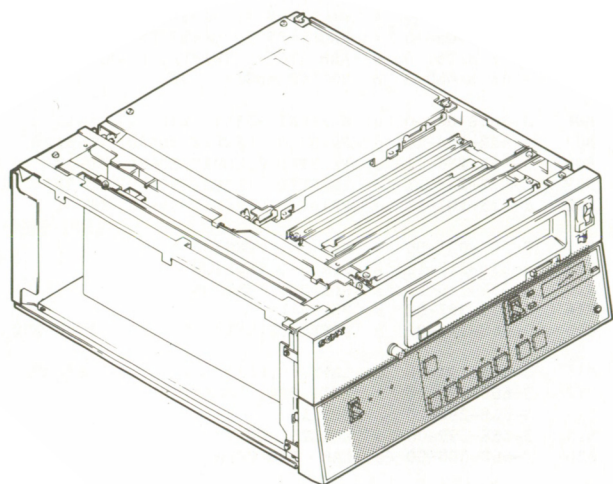
No.	Part No.	SP	Description
701	X-3668-734-0	o	BASE ASS'Y, PINCH PRESS
702	X-3668-735-3	s	LEVER ASS'Y, RESERVE PRESS
703	X-3668-736-0	o	JOINT ASS'Y
704	1-454-416-31	s	SOLENOID, PLUNGER
705	3-610-265-02	s	SPRING
706	3-642-477-00		SPRING, TENSION
707	3-645-392-00	s	SPRING, TENSION
708	3-668-863-00	s	GUIDE, ARBOR
709	3-668-864-00	s	PIN, SOLENOID
710	3-668-865-00	o	LEVER (B), PINCH PRESS
711	3-668-867-00	o	SPACER (8x9)
712	3-668-884-03	o	JOINT, RESERVE PRESS
713	3-668-896-00	o	SLEEVE, PRESS LEVER, PINCH
714	3-703-074-00	s	CAP 3, SHAFT
715	3-718-364-01	o	LEVER (A), PINCH PRESS
716	3-718-365-01	o	PLATE, PRESS, PINCH
717	3-718-727-01	o	DECK, RESERVE PRESS

CASSETTE-UP COMPARTMENT BLOCK



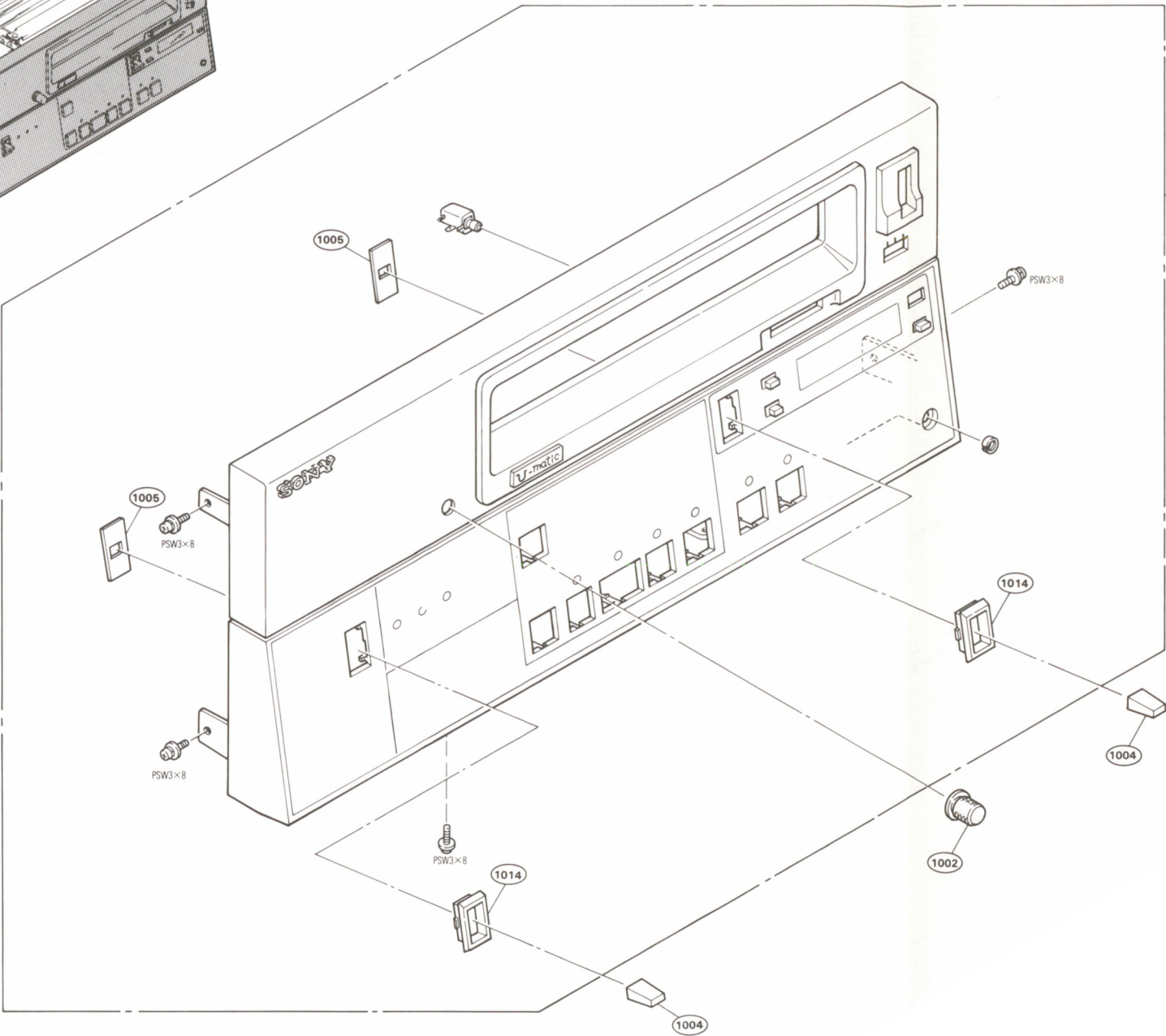
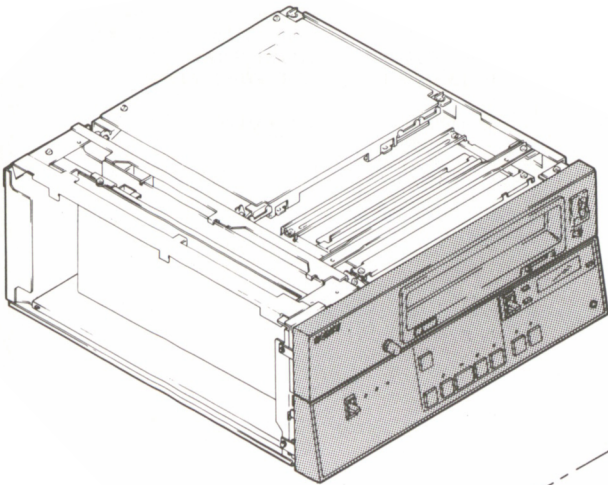
No.	Part No.	SP	Description
801	A-6751-367-A	s	CASSETTE-UP BLOCK ASS'Y
802	X-3668-057-0	s	RACK ASS'Y, CASSETTE COMPARTMENT
803	X-3668-058-0	s	RACK ASS'Y, CASSETTE COMPARTMENT
804	X-3668-059-0	s	ARM ASS'Y, SWITCH, DOWN
805	X-3668-060-3	o	HOLDER ASS'Y, ARM
806	X-3668-061-0	o	SUPPORT ASS'Y, LID
807	1-622-255-11	o	PRINTED CIRCUIT BOARD, CC-31
808	1-622-256-11	o	PRINTED CIRCUIT BOARD, CC-32
809	1-622-257-11	o	PRINTED CIRCUIT BOARD, CC-33
810	1-623-101-11	o	PRINTED CIRCUIT BOARD, LP-41
811	3-507-051-00	s	SPRING, TENSION
812	3-534-217-11	s	SPRING, TENSION
813	3-536-780-11	s	SPRING, TENSION
814	3-653-387-00	s	BELT, LM
815	3-668-295-00	o	LEVER (RIGHT), CASSETTE PUSH-OUT
816	3-668-296-00	o	LEVER (LEFT), CASSETTE PUSH-OUT
817	3-668-297-00	s	RETAINER, CASSETTE
818	3-668-298-00	o	SPRING
819	3-668-299-00	s	ROLLER, GUIDE
820	3-668-300-00	o	CAM, LID OPEN
821	3-668-301-00	o	SHAFT, DRIVING
822	3-668-303-00	s	GEAR (A)
823	3-668-304-00	s	GEAR (B)
824	3-668-305-00	s	GEAR (C)
825	3-668-306-00	s	GEAR (D)
826	3-668-307-02	o	JOINT (R), LEFT & RIGHT
827	3-668-309-00	o	BRACKET, SWITCH
828	3-668-310-02	o	ARM, LID OPEN
829	3-668-313-02	s	FRAME, SUPPORT, REFLECTOR
830	3-668-315-02	s	GEAR, LID
831	3-668-371-11	s	LID, CASSETTE
832	3-668-474-00	s	BEARING (6)
833	3-672-604-11	s	REFLECTOR
834	3-672-639-03	s	BRACKET, LAMP
835	3-672-750-01	s	PULLEY (C), MOTOR
836	3-701-439-21	s	WASHER, POLY 3MM DIA., 0.50T
837	3-718-373-01	o	RETAINER, LID
838	3-718-374-01	o	JOINT (F), LEFT & RIGHT
839	8-835-179-01	s	MOTOR, DC MCB2B15

FUNCTION CONTROL

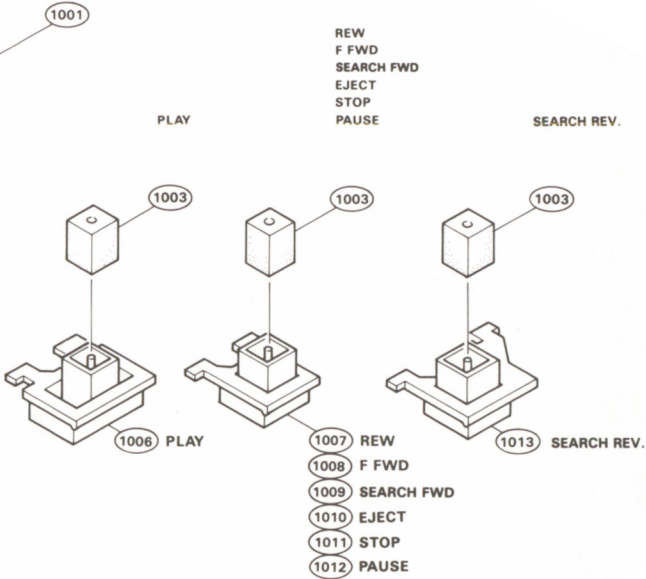


No.	Part No.	SP	Description
901	A-6717-452-A	o	MOUNTED CIRCUIT BOARD, KY-105B
902	1-516-298-00	s	SWITCH, LEVER SLIDE
903	1-516-995-00	s	SWITCH, LEVER SLIDE
904	1-552-271-00	s	SWITCH, SLIDE
905	1-552-539-00	s	SWITCH, KEY BOARD
906	1-553-739-21	s	SWITCH, KEY BOARD
907	1-570-117-31	s	SWITCH, SEESAW (AC POWER)
908	1-570-145-11	s	SWITCH, SLIDE
909	3-672-754-01	o	HOLDER, PC BOARD
910	3-672-765-01	o	BRACKET, C
911	3-688-814-01	s	CAP, SWITCH
912	3-718-324-01	s	KNOB, FC SWITCH
913	3-718-375-01	o	PLATE(B), SIELD, KY

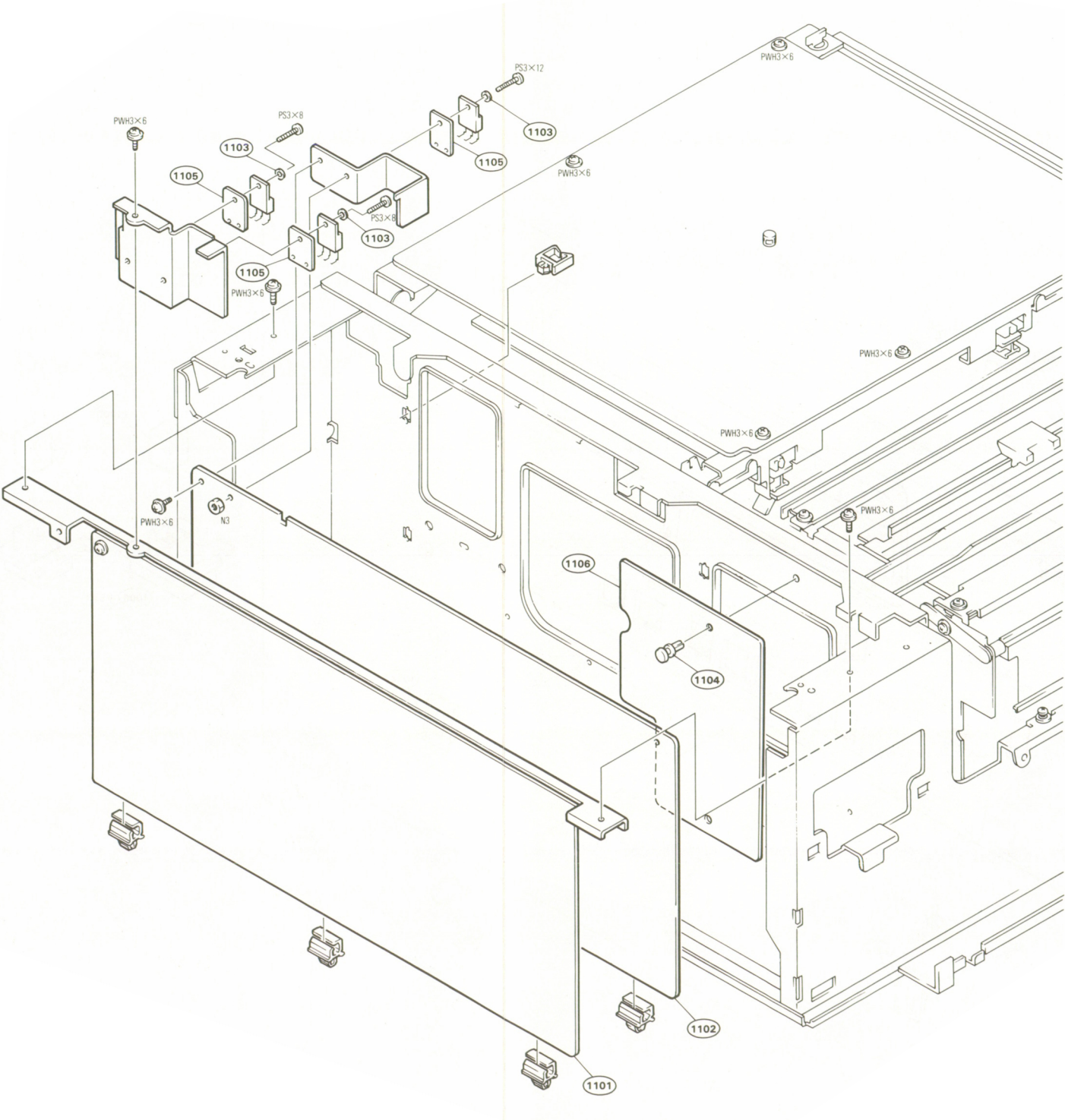
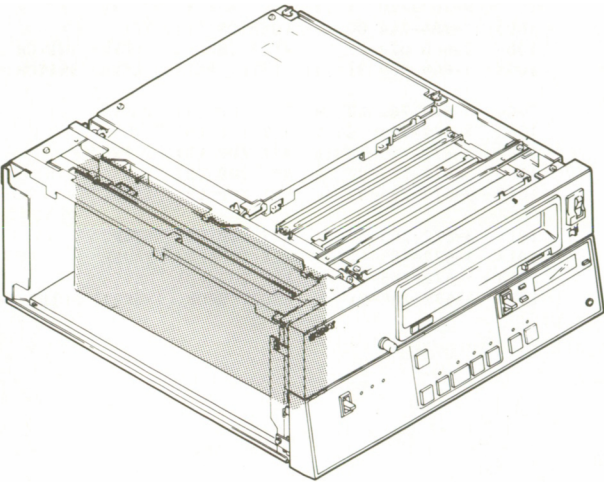
FRONT PANEL BLOCK



No.	Part No.	SP	Description
1001	A-6704-268-A	o	PANEL ASS'Y, FRONT
1002	X-3672-707-1	s	KNOB ASS'Y, VOLUME
1003	2-284-744-00	o	CUSHION (B), KEY
1004	3-668-028-21	s	KNOB (SMALL), LEVER SWITCH
1005	3-669-909-31	o	PLATE, BLIND, LEVER SWITCH
1006	3-672-782-02	s	KEY TOP (A) "PLAY"
1007	3-672-783-02	s	KEY TOP (B) "REW"
1008	3-672-783-12	s	KEY TOP (B) "F FWD"
1009	3-672-783-22	s	KEY TOP (B) "FWD"
1010	3-672-783-32	s	KEY TOP (B) "EJECT"
1011	3-672-783-42	s	KEY TOP (B) "STOP"
1012	3-672-783-52	s	KEY TOP (B) "PAUSE"
1013	3-672-785-02	s	KEY TOP (D) "REV"
1014	3-672-786-21	o	ESCUTCHEON (INNER), SLIDE SW

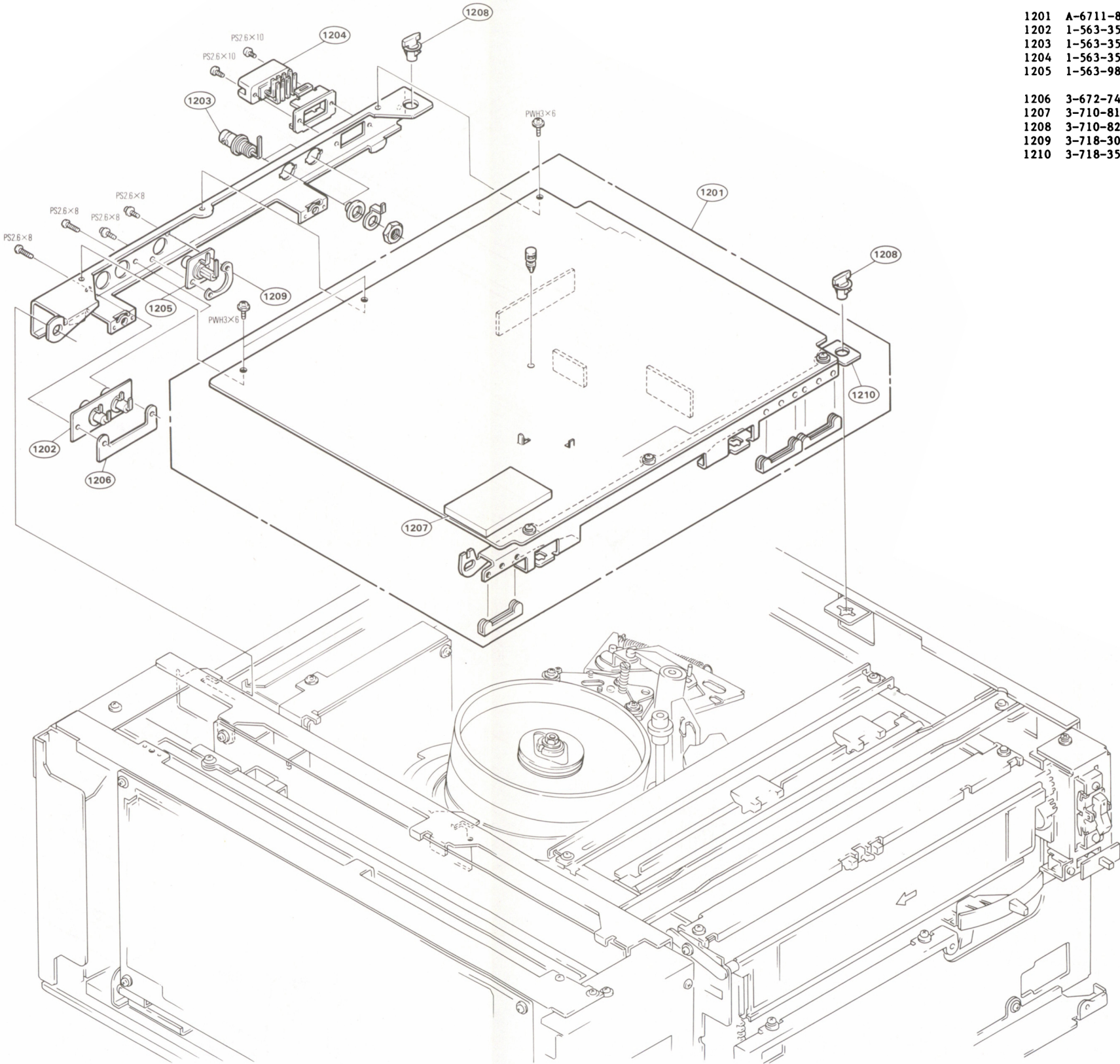
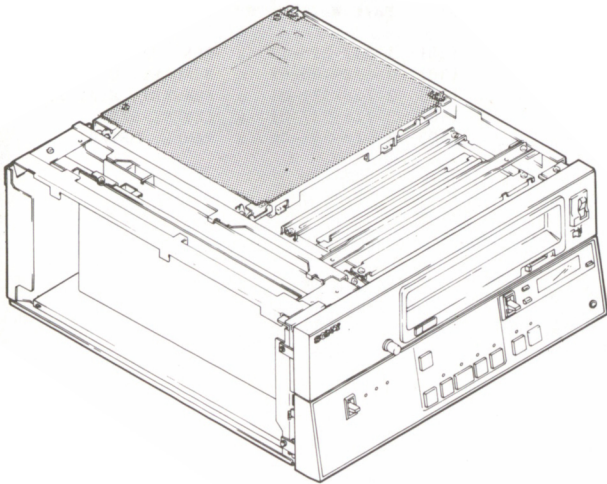


CHASSIS BLOCK (1), LEFT SIDE



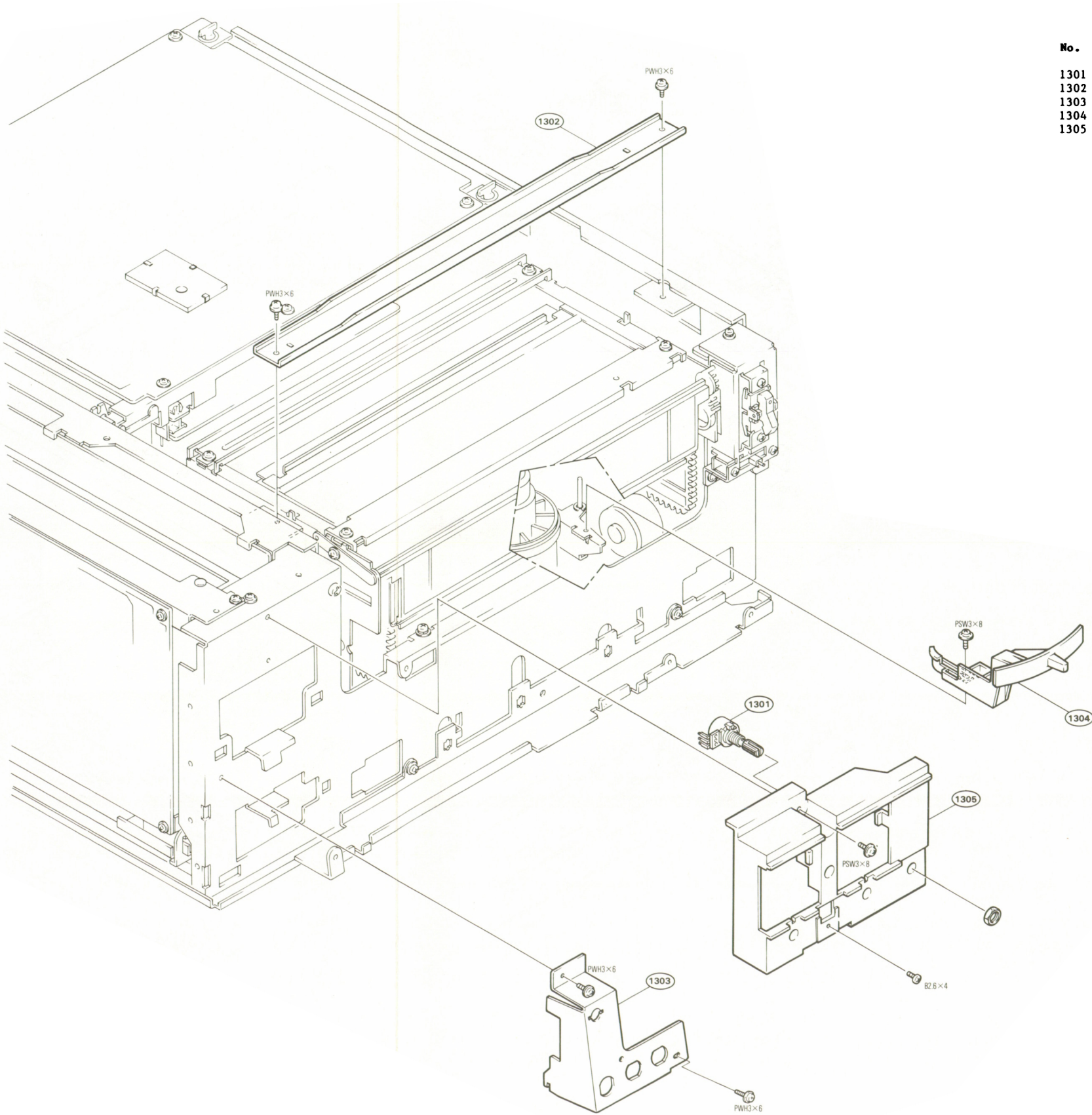
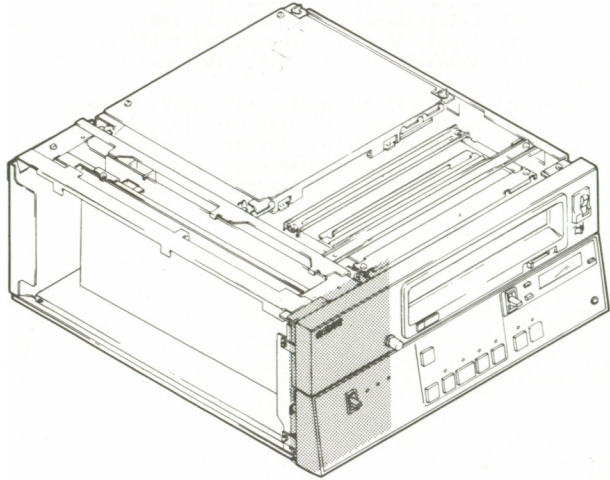
No.	Part No.	SP	Description
1101	A-6715-366-A	o	MOUNTED CIRCUIT BOARD, SV-93B
1102	A-6717-451-B	o	MOUNTED CIRCUIT BOARD, SY-106B
1103	2-371-561-00	s	BUSHING (P), INSULATING
1104	3-646-090-00	s	RIVET, NYLON
1105	3-703-037-00	s	INSULATOR, T0-220
1106	3-718-370-01	o	INSULATOR, SY

CHASSIS BLOCK (2), BACK SIDE



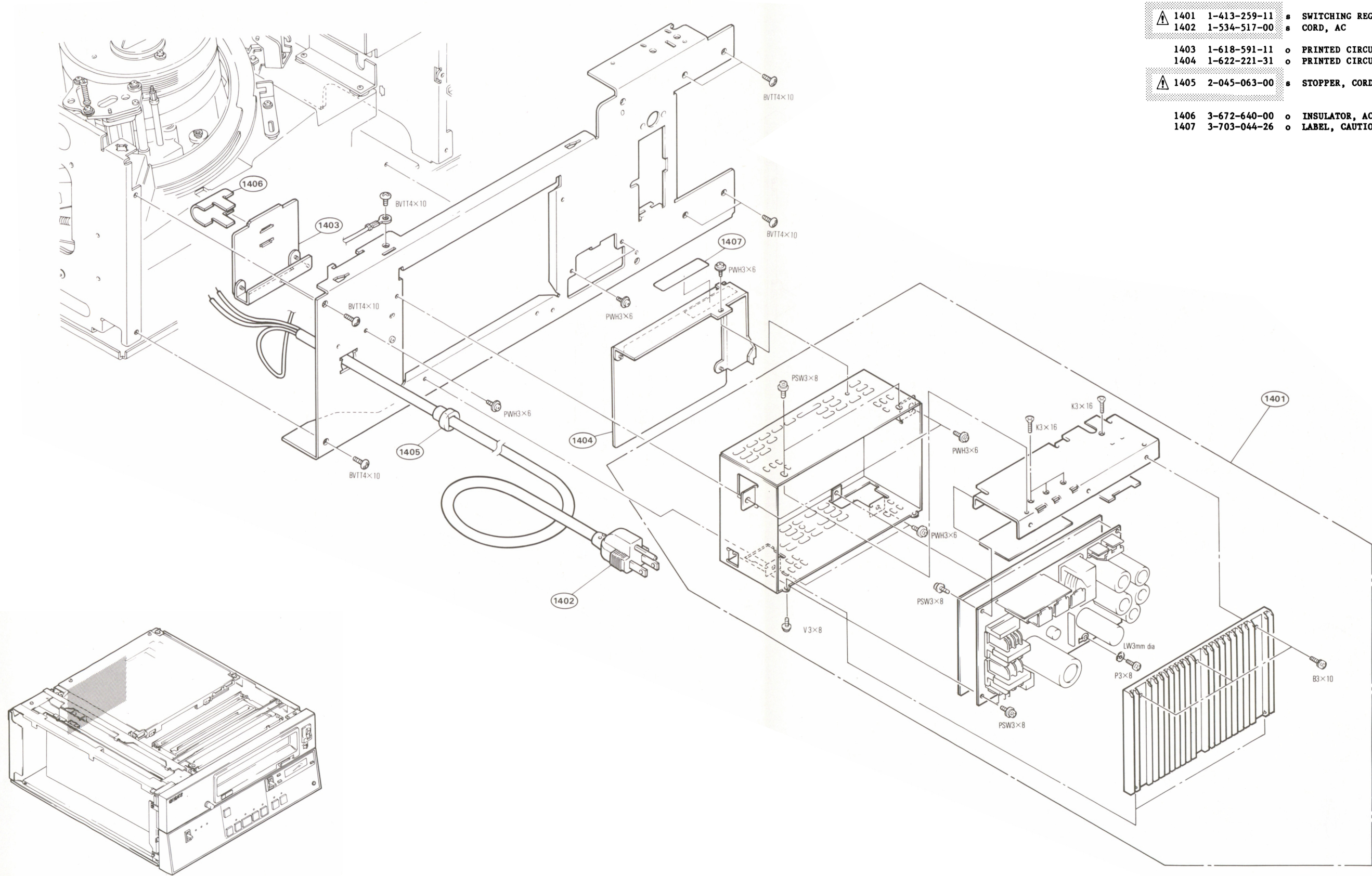
No.	Part No.	SP	Description
1201	A-6711-820-A	o	MOUNTED CIRCUIT BOARD, VA-57
1202	1-563-353-11	s	JACK, PIN (RCA) 2P
1203	1-563-354-11	s	CONNECTOR, BNC
1204	1-563-356-11	s	CONNECTOR, MULTI 8P
1205	1-563-989-11	s	JACK, PIN (RCA) 1P
1206	3-672-747-01	o	BRACKET, JACK, 2PRCA
1207	3-710-816-01	o	CASE (VH) (M), SHIELD
1208	3-710-825-01	o	FASTENER, PLATE
1209	3-718-302-01	o	BRACKET, PIN JACK
1210	3-718-354-01	o	BRACKET, VR

LEVEL CONTROL PANEL



No.	Part No.	SP	Description
1301	1-237-215-11	s	RES, VAR CARBON 100K
1302	3-672-765-01	o	BRACKET, C
1303	3-718-331-01	o	BRACKET, HEAD PHONE
1304	3-718-337-01	s	LEVER, SKEW
1305	3-718-341-01	o	PANEL, METER

SWITCHING REGULATOR

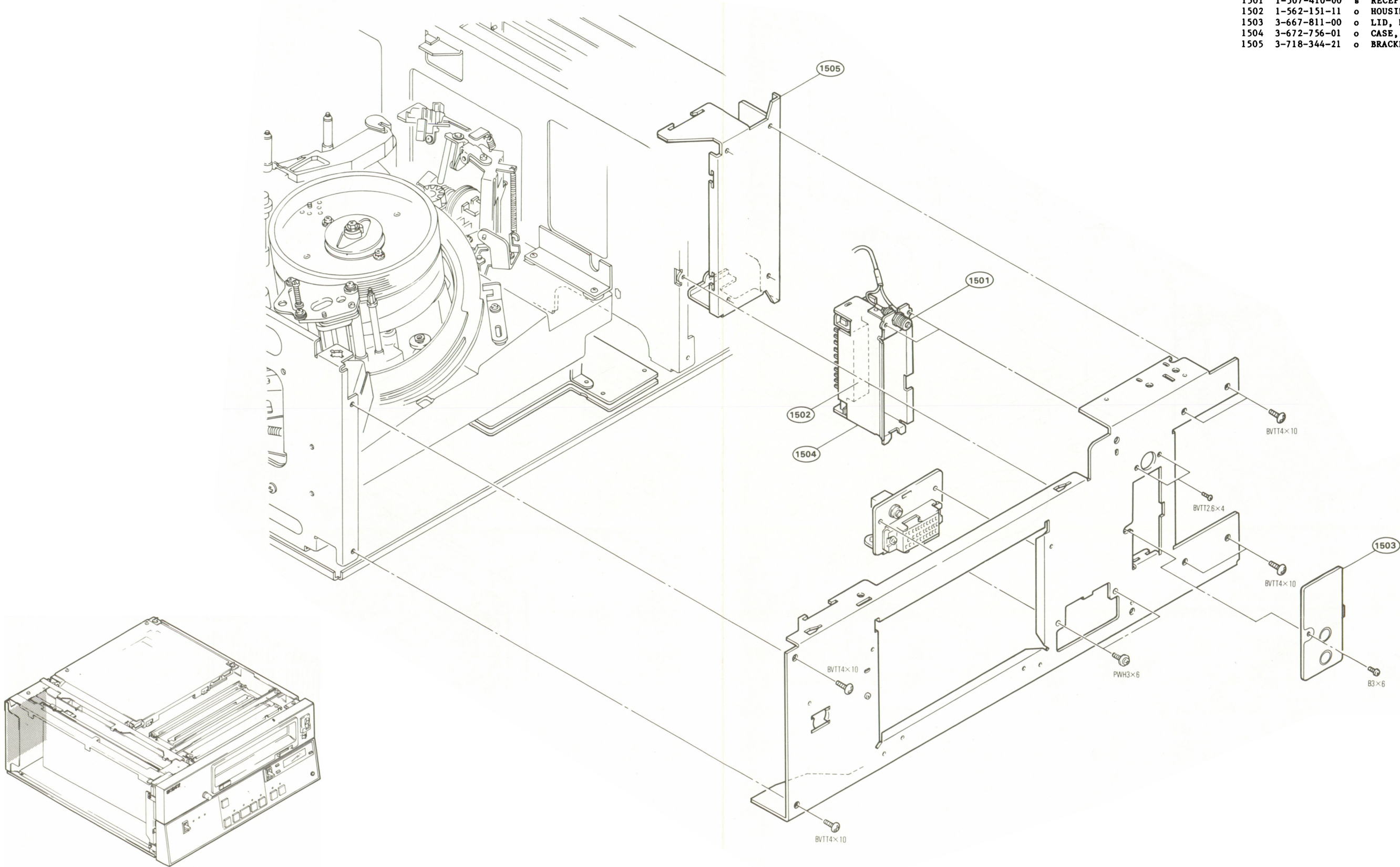


No. Part No. SP Description

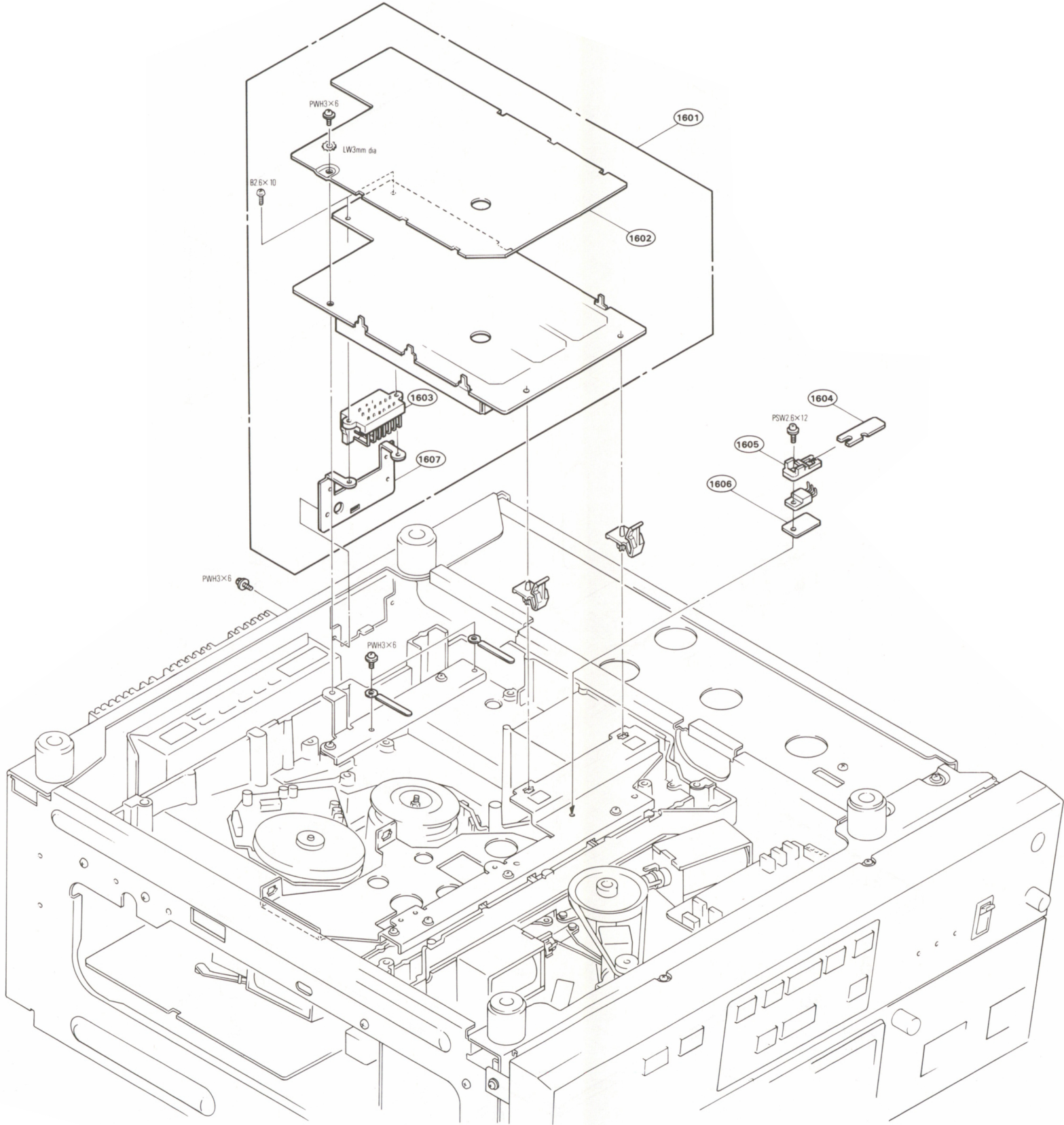
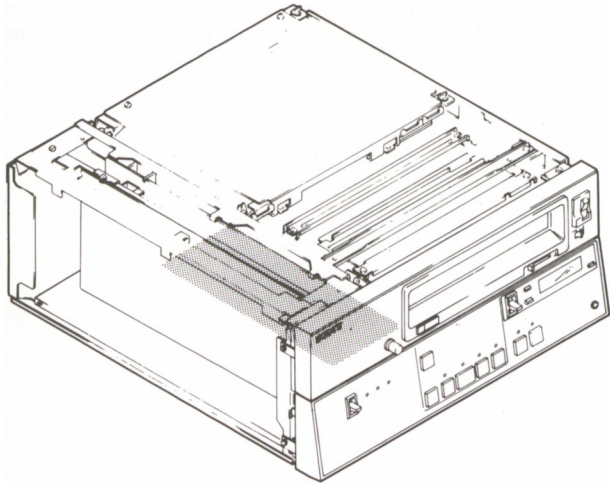
⚠	1401	1-413-259-11	8	SWITCHING REGULATOR (ZSSP435GA)
	1402	1-534-517-00	8	CORD, AC
	1403	1-618-591-11	0	PRINTED CIRCUIT BOARD, AC-65
	1404	1-622-221-31	0	PRINTED CIRCUIT BOARD, DC-31B
⚠	1405	2-045-063-00	8	STOPPER, CORD
	1406	3-672-640-00	0	INSULATOR, AC
	1407	3-703-044-26	0	LABEL, CAUTION

CONNECTOR PANEL

No.	Part No.	SP	Description
1501	1-507-410-00	s	RECEPTACLE (F TYPE)
1502	1-562-151-11	o	HOUSING, CONNECTOR 6P
1503	3-667-811-00	o	LID, MD
1504	3-672-756-01	o	CASE, RF
1505	3-718-344-21	o	BRACKET, XLR

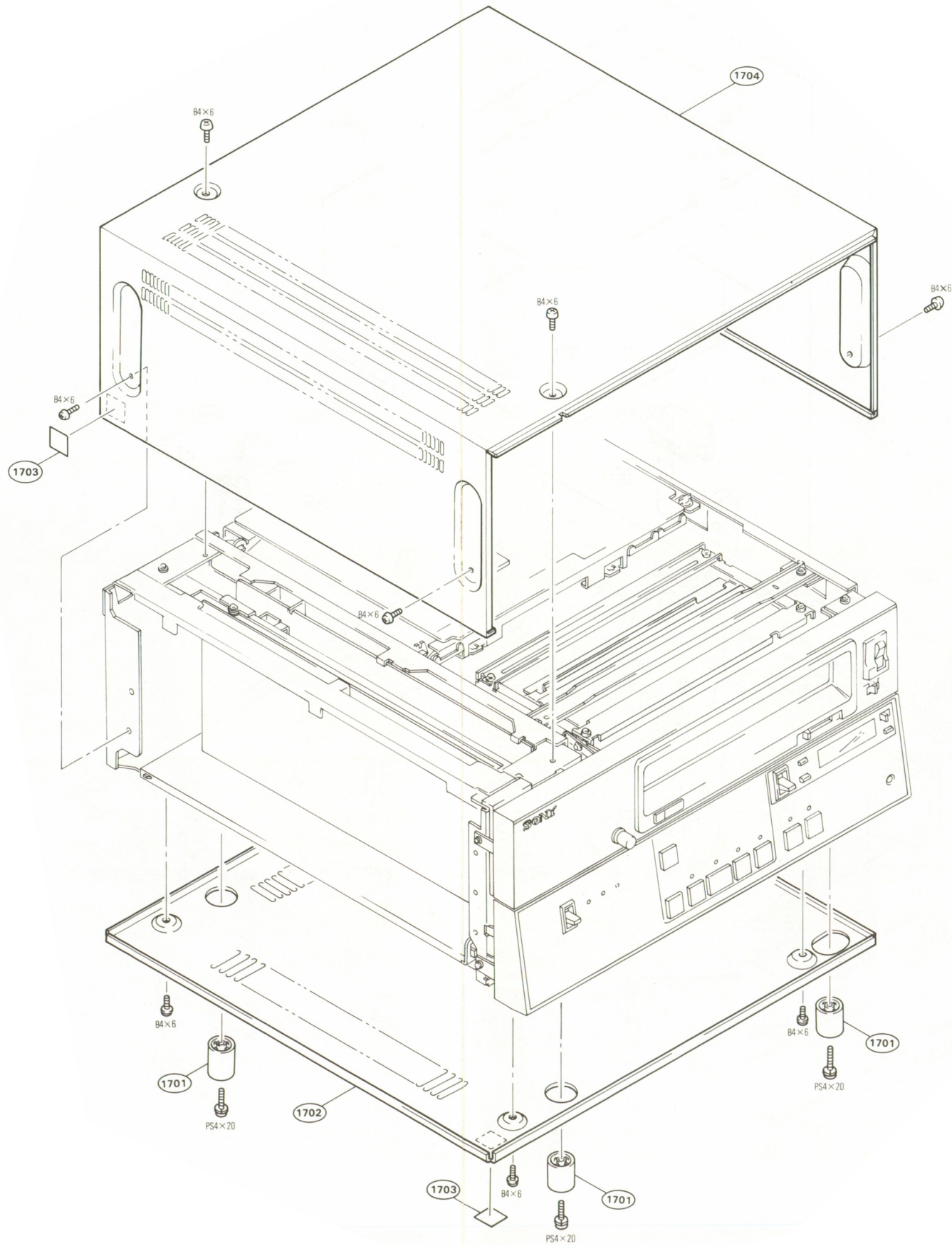
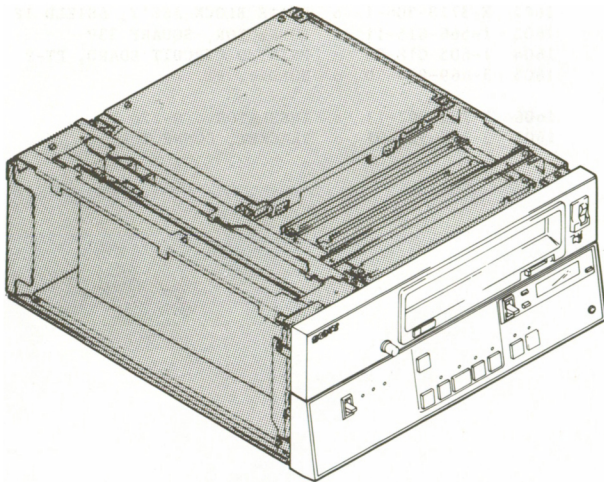


CHASSIS BLOCK (3), BOTTOM



No.	Part No.	SP	Description
1601	A-6717-450-B	o	MOUNTED CIRCUIT BOARD, IF-132
1602	X-3718-306-1	o	PLATE BLOCK ASS'Y, SHIELD IF
1603	1-566-615-11	s	CONNECTOR, SQUARE 33P
1604	1-605-018-00	o	PRINTED CIRCUIT BOARD, PT-9
1605	3-669-904-00	o	HOLDER, PT
1606	3-703-207-11	s	INSULATOR, TO-220
1607	3-718-321-01	o	BRACKET, CONNECTOR

ORNAMENTAL PANEL BLOCK



No.	Part No.	SP	Description
1701	3-642-656-01	s	LEG
1702	3-672-766-01	o	BOARD, BOTTOM
1703	3-703-848-01	o	LABEL (N), SUB CAUTION
1704	3-718-347-01	o	CASE, U

15-3. ELECTRICAL PARTS LIST

General Purpose Electrical Parts List

Parts that are not listed in the "reference numbers order list" are shown in following list.

Reference numbers are omitted.

Part No. SP Description

CAPACITOR

.MYLAR

1-130-467-00	s	CAP, MYLAR	470pF	5%	50V
1-130-468-00	s	CAP, MYLAR	560pF	5%	50V
1-130-469-00	s	CAP, MYLAR	680pF	5%	50V
1-130-470-00	s	CAP, MYLAR	820pF	5%	50V
1-130-471-00	s	CAP, MYLAR	1000pF	5%	50V
1-130-472-00	s	CAP, MYLAR	1200pF	5%	50V
1-130-473-00	s	CAP, MYLAR	1500pF	5%	50V
1-130-474-00	s	CAP, MYLAR	1800pF	5%	50V
1-130-475-00	s	CAP, MYLAR	2200pF	5%	50V
1-130-476-00	s	CAP, MYLAR	2700pF	5%	50V
1-130-477-00	s	CAP, MYLAR	3300pF	5%	50V
1-130-478-00	s	CAP, MYLAR	3900pF	5%	50V
1-130-479-00	s	CAP, MYLAR	4700pF	5%	50V
1-130-480-00	s	CAP, MYLAR	5600pF	5%	50V
1-130-481-00	s	CAP, MYLAR	6800pF	5%	50V
1-130-482-00	s	CAP, MYLAR	8200pF	5%	50V
1-130-483-00	s	CAP, MYLAR	0.01	5%	50V
1-130-484-00	s	CAP, MYLAR	0.012	5%	50V
1-130-485-00	s	CAP, MYLAR	0.015	5%	50V
1-130-486-00	s	CAP, MYLAR	0.018	5%	50V
1-130-487-00	s	CAP, MYLAR	0.022	5%	50V
1-130-488-00	s	CAP, MYLAR	0.027	5%	50V
1-130-489-00	s	CAP, MYLAR	0.033	5%	50V
1-130-490-11	s	CAP, MYLAR	0.039	5%	50V
1-130-491-00	s	CAP, MYLAR	0.047	5%	50V
1-130-492-11	s	CAP, MYLAR	0.056	5%	50V
1-130-493-00	s	CAP, MYLAR	0.068	5%	50V
1-130-494-11	s	CAP, MYLAR	0.082	5%	50V
1-130-495-00	s	CAP, MYLAR	0.1	5%	50V
1-130-496-00	s	CAP, MYLAR	0.12	5%	50V
1-130-497-00	s	CAP, MYLAR	0.15	5%	50V
1-130-498-00	s	CAP, MYLAR	0.18	5%	50V
1-130-499-00	s	CAP, MYLAR	0.22	5%	50V
1-136-502-11	s	CAP, MYLAR	0.33	5%	50V

Part No. SP Description

.MICA, SILVERED

1-107-019-00	s	CAP, MICA	1.0pF	±0.5pF	500V
1-107-039-00	s	CAP, MICA	1.2pF	±0.5pF	500V
1-107-040-00	s	CAP, MICA	1.5pF	±0.5pF	500V
1-107-041-00	s	CAP, MICA	1.8pF	±0.5pF	500V
1-107-042-00	s	CAP, MICA	2.2pF	±0.5pF	500V
1-107-043-00	s	CAP, MICA	2.7pF	±0.5pF	500V
1-107-044-00	s	CAP, MICA	3.3pF	±0.5pF	500V
1-107-045-00	s	CAP, MICA	3.9pF	±0.5pF	500V
1-107-046-00	s	CAP, MICA	4.7pF	±0.5pF	500V
1-107-026-00	s	CAP, MICA	5.1pF	±0.5pF	500V
1-107-047-00	s	CAP, MICA	5.6pF	±0.5pF	500V
1-107-048-00	s	CAP, MICA	6.8pF	±0.5pF	500V
1-107-049-00	s	CAP, MICA	8.2pF	±0.5pF	500V
1-107-202-00	s	CAP, MICA	10pF	5%	500V
1-107-203-00	s	CAP, MICA	11pF	5%	500V
1-107-204-00	s	CAP, MICA	12pF	5%	500V
1-107-205-00	s	CAP, MICA	13pF	5%	500V
1-107-206-00	s	CAP, MICA	15pF	5%	500V
1-107-207-00	s	CAP, MICA	16pF	5%	500V
1-107-208-00	s	CAP, MICA	18pF	5%	500V
1-107-209-00	s	CAP, MICA	20pF	5%	500V
1-107-210-00	s	CAP, MICA	22pF	5%	500V
1-107-211-00	s	CAP, MICA	24pF	5%	500V
1-107-157-00	s	CAP, MICA	27pF	5%	500V
1-107-158-00	s	CAP, MICA	30pF	5%	500V
1-107-159-00	s	CAP, MICA	33pF	5%	500V
1-107-074-00	s	CAP, MICA	36pF	5%	50V
1-107-075-00	s	CAP, MICA	39pF	5%	50V
1-107-076-00	s	CAP, MICA	43pF	5%	50V
1-107-077-00	s	CAP, MICA	47pF	5%	50V
1-107-164-00	s	CAP, MICA	51pF	5%	500V
1-107-165-00	s	CAP, MICA	56pF	5%	500V
1-107-166-00	s	CAP, MICA	62pF	5%	500V
1-107-036-00	s	CAP, MICA	68pF	5%	500V
1-107-167-00	s	CAP, MICA	75pF	5%	500V
1-107-083-00	s	CAP, MICA	82pF	5%	50V
1-107-084-00	s	CAP, MICA	91pF	5%	50V
1-107-085-00	s	CAP, MICA	100pF	5%	50V
1-107-086-00	s	CAP, MICA	110pF	5%	50V
1-107-087-00	s	CAP, MICA	120pF	5%	50V
1-109-538-00	s	CAP, MICA	130pF	5%	100V
1-109-539-00	s	CAP, MICA	150pF	5%	100V
1-107-090-00	s	CAP, MICA	160pF	5%	50V
1-109-540-00	s	CAP, MICA	180pF	5%	100V
1-109-541-00	s	CAP, MICA	200pF	5%	100V
1-109-542-00	s	CAP, MICA	220pF	5%	100V
1-109-545-00	s	CAP, MICA	270pF	5%	100V
1-109-547-00	s	CAP, MICA	330pF	5%	100V
1-109-549-00	s	CAP, MICA	390pF	5%	100V
1-109-633-00	s	CAP, MICA	470pF	2%	500V
1-109-555-00	s	CAP, MICA	560pF	5%	100V
1-109-635-00	s	CAP, MICA	470pF	2%	500V

Part No. SP Description

.ELECTROLYTIC

1-124-902-00	s	CAP, ELECT	0.47	20%	50V
1-124-791-11	s	CAP, ELECT	1.0	20%	100V
1-124-925-11	s	CAP, ELECT	2.2	20%	100V
1-123-382-00	s	CAP, ELECT	3.3	20%	100V
1-124-927-00	s	CAP, ELECT	4.7	20%	100V
1-123-875-91	s	CAP, ELECT	10	20%	50V
1-124-915-11	s	CAP, ELECT	10	20%	63V
1-124-667-11	s	CAP, ELECT	10	20%	100V
1-124-908-11	s	CAP, ELECT	22	20%	50V
1-124-916-11	s	CAP, ELECT	22	20%	63V
1-124-929-11	s	CAP, ELECT	22	20%	100V
1-124-963-11	s	CAP, ELECT	33	20%	16V
1-124-482-11	s	CAP, ELECT	33	20%	35V
1-124-917-11	s	CAP, ELECT	33	20%	63V
1-124-930-11	s	CAP, ELECT	33	20%	100V
1-124-446-11	s	CAP, ELECT	47	20%	10V
1-124-477-11	s	CAP, ELECT	47	20%	25V
1-124-910-11	s	CAP, ELECT	47	20%	50V
1-124-918-11	s	CAP, ELECT	47	20%	63V
1-124-931-11	s	CAP, ELECT	47	20%	100V
1-124-443-00	s	CAP, ELECT	100	20%	10V
1-126-101-11	s	CAP, ELECT	100	20%	16V
1-124-478-11	s	CAP, ELECT	100	20%	25V
1-124-122-11	s	CAP, ELECT	100	20%	50V
1-124-572-11	s	CAP, ELECT	100	20%	63V
1-123-605-00	s	CAP, ELECT	100	20%	100V
1-124-444-00	s	CAP, ELECT	220	20%	10V
1-124-120-11	s	CAP, ELECT	220	20%	25V
1-124-484-11	s	CAP, ELECT	220	20%	35V
1-124-911-11	s	CAP, ELECT	220	20%	50V
1-124-919-51	s	CAP, ELECT	220	20%	63V
1-124-628-11	s	CAP, ELECT	220	20%	100V
1-124-442-00	s	CAP, ELECT	330	20%	6.3V
1-124-604-00	s	CAP, ELECT	330	20%	10V
1-124-119-00	s	CAP, ELECT	330	20%	16V
1-124-479-11	s	CAP, ELECT	330	20%	25V
1-124-485-11	s	CAP, ELECT	330	20%	35V
1-124-912-11	s	CAP, ELECT	330	20%	50V
1-124-472-11	s	CAP, ELECT	470	20%	10V
1-124-475-11	s	CAP, ELECT	470	20%	16V
1-124-480-11	s	CAP, ELECT	470	20%	25V
1-126-104-11	s	CAP, ELECT	470	20%	35V
1-124-913-11	s	CAP, ELECT	470	20%	50V
1-124-921-11	s	CAP, ELECT	470	20%	63V
1-124-471-00	s	CAP, ELECT	1000	20%	6.3V
1-124-473-11	s	CAP, ELECT	1000	20%	10V
1-124-555-00	s	CAP, ELECT	1000	20%	16V
1-124-557-11	s	CAP, ELECT	1000	20%	25V
1-126-105-11	s	CAP, ELECT	1000	20%	35V
1-124-637-11	s	CAP, ELECT	1000	20%	50V
1-124-922-11	s	CAP, ELECT	1000	20%	63V
1-124-893-11	s	CAP, ELECT	2200	20%	10V
1-124-556-11	s	CAP, ELECT	2200	20%	16V
1-124-563-11	s	CAP, ELECT	2200	20%	25V
1-124-618-11	s	CAP, ELECT	2200	20%	35V

Part No. SP Description

1-124-607-11	s	CAP, ELECT	2200	20%	50V
1-124-621-11	s	CAP, ELECT	3300	20%	6.3V
1-124-887-00	s	CAP, ELECT	3300	20%	16V
1-124-636-00	s	CAP, ELECT	3300	20%	25V
1-124-762-00	s	CAP, ELECT	4700	20%	10V
1-124-898-11	s	CAP, ELECT	4700	20%	16V
1-124-564-11	s	CAP, ELECT	4700	20%	25V
1-124-891-11	s	CAP, ELECT	10000	20%	6.3V
1-124-763-00	s	CAP, ELECT	10000	20%	10V

Part No. SP Description

.CHIP, CERAMIC

1-163-083-00	s	CAP, CHIP CERAMIC	1pF	±0.25pF	50V
1-163-085-00	s	CAP, CHIP CERAMIC	2pF	±0.25pF	50V
1-163-087-00	s	CAP, CHIP CERAMIC	4pF	±0.25pF	50V
1-163-089-00	s	CAP, CHIP CERAMIC	6pF	±0.5pF	50V
1-163-091-00	s	CAP, CHIP CERAMIC	8pF	±0.5pF	50V
1-163-093-00	s	CAP, CHIP CERAMIC	10pF		5% 50V
1-163-097-00	s	CAP, CHIP CERAMIC	15pF		5% 50V
1-163-101-00	s	CAP, CHIP CERAMIC	22pF		5% 50V
1-163-105-00	s	CAP, CHIP CERAMIC	33pF		5% 50V
1-163-109-00	s	CAP, CHIP CERAMIC	47pF		5% 50V
1-163-113-00	s	CAP, CHIP CERAMIC	68pF		5% 50V
1-163-117-00	s	CAP, CHIP CERAMIC	100pF		5% 50V
1-163-121-00	s	CAP, CHIP CERAMIC	150pF		5% 50V
1-163-125-00	s	CAP, CHIP CERAMIC	220pF		5% 50V
1-163-129-00	s	CAP, CHIP CERAMIC	330pF		5% 50V
1-163-133-00	s	CAP, CHIP CERAMIC	470pF		5% 50V
1-163-137-00	s	CAP, CHIP CERAMIC	680pF		5% 50V
1-163-141-00	s	CAP, CHIP CERAMIC	1000pF		5% 50V
1-163-145-00	s	CAP, CHIP CERAMIC	1500pF		10% 50V
1-163-013-00	s	CAP, CHIP CERAMIC	2200pF		10% 50V
1-163-015-00	s	CAP, CHIP CERAMIC	3300pF		10% 50V
1-163-017-00	s	CAP, CHIP CERAMIC	4700pF		10% 50V
1-163-019-00	s	CAP, CHIP CERAMIC	6800pF		10% 50V
1-163-021-00	s	CAP, CHIP CERAMIC	0.01		10% 50V
1-163-023-00	s	CAP, CHIP CERAMIC	0.015		10% 50V
1-163-034-00	s	CAP, CHIP CERAMIC	0.033		50V
1-163-035-00	s	CAP, CHIP CERAMIC	0.047		50V
1-163-036-00	s	CAP, CHIP CERAMIC	0.068		50V
1-163-038-00	s	CAP, CHIP CERAMIC	0.1		50V

Part No. SP Description

INDUCTOR

.MICRO

1-408-397-00	s	INDUCTOR, MICRO	1.0		5%
1-408-399-00	s	INDUCTOR, MICRO	1.5		5%
1-408-400-00	s	INDUCTOR, MICRO	1.8		5%
1-408-401-00	s	INDUCTOR, MICRO	2.2		5%
1-408-403-00	s	INDUCTOR, MICRO	3.3		5%
1-408-404-00	s	INDUCTOR, MICRO	3.9		5%
1-408-405-00	s	INDUCTOR, MICRO	4.7		5%
1-408-406-00	s	INDUCTOR, MICRO	5.6		5%
1-408-407-00	s	INDUCTOR, MICRO	6.8		5%
1-408-408-00	s	INDUCTOR, MICRO	8.2		5%
1-408-409-00	s	INDUCTOR, MICRO	10		5%
1-408-410-00	s	INDUCTOR, MICRO	12		5%
1-408-411-00	s	INDUCTOR, MICRO	15		5%
1-408-412-00	s	INDUCTOR, MICRO	18		5%
1-408-413-00	s	INDUCTOR, MICRO	22		5%
1-408-414-00	s	INDUCTOR, MICRO	27		5%
1-408-415-00	s	INDUCTOR, MICRO	33		5%
1-408-416-00	s	INDUCTOR, MICRO	39		5%
1-408-417-00	s	INDUCTOR, MICRO	47		5%
1-408-418-00	s	INDUCTOR, MICRO	56		5%
1-408-419-00	s	INDUCTOR, MICRO	68		5%
1-408-420-00	s	INDUCTOR, MICRO	82		5%
1-408-421-00	s	INDUCTOR, MICRO	100		5%
1-408-422-00	s	INDUCTOR, MICRO	120		5%
1-408-423-00	s	INDUCTOR, MICRO	150		5%
1-408-424-00	s	INDUCTOR, MICRO	180		5%
1-408-425-00	s	INDUCTOR, MICRO	220		5%
1-408-426-00	s	INDUCTOR, MICRO	270		5%
1-408-427-00	s	INDUCTOR, MICRO	330		5%
1-408-428-00	s	INDUCTOR, MICRO	390		5%
1-408-429-00	s	INDUCTOR, MICRO	470		5%
1-410-116-11	s	INDUCTOR, MICRO	560		5%
1-410-492-11	s	INDUCTOR, MICRO	680		5%
1-410-493-11	s	INDUCTOR, MICRO	820		5%
1-410-494-11	s	INDUCTOR, MICRO	1000		5%

Part No. SP Description

RESISTOR

.CARBON

1-249-381-11	s	RES, CARBON	1.0	5%	1/6W
1-249-382-11	s	RES, CARBON	1.2	5%	1/6W
1-249-383-11	s	RES, CARBON	1.5	5%	1/6W
1-249-384-11	s	RES, CARBON	1.8	5%	1/6W
1-249-385-11	s	RES, CARBON	2.2	5%	1/6W
1-249-386-11	s	RES, CARBON	2.7	5%	1/6W
1-249-387-11	s	RES, CARBON	3.3	5%	1/6W
1-249-388-11	s	RES, CARBON	3.9	5%	1/6W
1-249-389-11	s	RES, CARBON	4.7	5%	1/6W
1-249-390-11	s	RES, CARBON	5.6	5%	1/6W
1-249-391-11	s	RES, CARBON	6.8	5%	1/6W
1-249-392-11	s	RES, CARBON	8.2	5%	1/6W
1-249-393-11	s	RES, CARBON	10	5%	1/6W
1-249-394-11	s	RES, CARBON	12	5%	1/6W
1-249-395-11	s	RES, CARBON	15	5%	1/6W
1-249-396-11	s	RES, CARBON	18	5%	1/6W
1-249-397-11	s	RES, CARBON	22	5%	1/6W
1-249-398-11	s	RES, CARBON	27	5%	1/6W
1-249-399-11	s	RES, CARBON	33	5%	1/6W
1-249-400-11	s	RES, CARBON	39	5%	1/6W
1-249-401-11	s	RES, CARBON	47	5%	1/6W
1-249-402-11	s	RES, CARBON	56	5%	1/6W
1-249-403-11	s	RES, CARBON	68	5%	1/6W
1-215-394-00	s	RES, METAL	75	1%	1/6W
1-249-404-11	s	RES, CARBON	82	5%	1/6W
1-249-405-11	s	RES, CARBON	100	5%	1/6W
1-249-406-11	s	RES, CARBON	120	5%	1/6W
1-249-407-11	s	RES, CARBON	150	5%	1/6W
1-249-408-11	s	RES, CARBON	180	5%	1/6W
1-249-409-11	s	RES, CARBON	220	5%	1/6W
1-249-410-11	s	RES, CARBON	270	5%	1/6W
1-249-411-11	s	RES, CARBON	330	5%	1/6W
1-249-412-11	s	RES, CARBON	390	5%	1/6W
1-249-413-11	s	RES, CARBON	470	5%	1/6W
1-249-414-11	s	RES, CARBON	560	5%	1/6W
1-249-415-11	s	RES, CARBON	680	5%	1/6W
1-249-416-11	s	RES, CARBON	820	5%	1/6W
1-249-417-11	s	RES, CARBON	1.0k	5%	1/6W
1-249-418-11	s	RES, CARBON	1.2k	5%	1/6W
1-249-419-11	s	RES, CARBON	1.5k	5%	1/6W
1-249-420-11	s	RES, CARBON	1.8k	5%	1/6W
1-249-421-11	s	RES, CARBON	2.2k	5%	1/6W
1-249-422-11	s	RES, CARBON	2.7k	5%	1/6W
1-249-423-11	s	RES, CARBON	3.3k	5%	1/6W
1-249-424-11	s	RES, CARBON	3.9k	5%	1/6W
1-249-425-11	s	RES, CARBON	4.7k	5%	1/6W
1-249-426-11	s	RES, CARBON	5.6k	5%	1/6W
1-249-427-11	s	RES, CARBON	6.8k	5%	1/6W
1-249-428-11	s	RES, CARBON	8.2k	5%	1/6W
1-249-429-11	s	RES, CARBON	10k	5%	1/6W
1-249-430-11	s	RES, CARBON	12k	5%	1/6W
1-249-431-11	s	RES, CARBON	15k	5%	1/6W
1-249-432-11	s	RES, CARBON	18k	5%	1/6W
1-249-433-11	s	RES, CARBON	22k	5%	1/6W
1-249-434-11	s	RES, CARBON	27k	5%	1/6W

Part No. SP Description

1-249-435-11	s	RES, CARBON	33k	5%	1/6W
1-249-436-11	s	RES, CARBON	39k	5%	1/6W
1-249-437-11	s	RES, CARBON	47k	5%	1/6W
1-249-438-11	s	RES, CARBON	56k	5%	1/6W
1-249-439-11	s	RES, CARBON	68k	5%	1/6W
1-249-440-11	s	RES, CARBON	82k	5%	1/6W
1-249-441-11	s	RES, CARBON	100k	5%	1/6W
1-215-471-00	s	RES, METAL	120k	1%	1/6W
1-215-473-00	s	RES, METAL	150k	1%	1/6W
1-215-475-00	s	RES, METAL	180k	1%	1/6W
1-215-477-00	s	RES, METAL	220k	1%	1/6W
1-215-479-00	s	RES, METAL	270k	1%	1/6W
1-215-481-00	s	RES, METAL	330k	1%	1/6W
1-215-483-00	s	RES, METAL	390k	1%	1/6W
1-215-485-00	s	RES, METAL	470k	1%	1/6W
1-215-487-00	s	RES, METAL	560k	1%	1/6W
1-215-489-00	s	RES, METAL	680k	1%	1/6W
1-215-491-00	s	RES, METAL	820k	1%	1/6W
1-215-493-00	s	RES, METAL	1.0M	1%	1/6W

Part No. SP Description

.METAL

1-215-373-31 s RES, METAL 10 1Z 1/6W
 1-215-374-00 s RES, METAL 11 1Z 1/6W
 1-215-375-00 s RES, METAL 12 1Z 1/6W
 1-215-376-00 s RES, METAL 13 1Z 1/6W
 1-215-377-00 s RES, METAL 15 1Z 1/6W

 1-215-378-00 s RES, METAL 16 1Z 1/6W
 1-215-379-00 s RES, METAL 18 1Z 1/6W
 1-215-380-00 s RES, METAL 20 1Z 1/6W
 1-215-381-00 s RES, METAL 22 1Z 1/6W
 1-215-382-00 s RES, METAL 24 1Z 1/6W

 1-215-383-00 s RES, METAL 27 1Z 1/6W
 1-215-384-00 s RES, METAL 30 1Z 1/6W
 1-215-385-00 s RES, METAL 33 1Z 1/6W
 1-215-386-00 s RES, METAL 36 1Z 1/6W
 1-215-387-00 s RES, METAL 39 1Z 1/6W

 1-215-388-00 s RES, METAL 43 1Z 1/6W
 1-215-389-00 s RES, METAL 47 1Z 1/6W
 1-215-390-00 s RES, METAL 51 1Z 1/6W
 1-215-391-00 s RES, METAL 56 1Z 1/6W
 1-215-392-00 s RES, METAL 62 1Z 1/6W

 1-215-393-00 s RES, METAL 68 1Z 1/6W
 1-215-394-00 s RES, METAL 75 1Z 1/6W
 1-215-395-00 s RES, METAL 82 1Z 1/6W
 1-215-396-00 s RES, METAL 91 1Z 1/6W
 1-215-397-00 s RES, METAL 100 1Z 1/6W

 1-215-398-00 s RES, METAL 110 1Z 1/6W
 1-215-399-00 s RES, METAL 120 1Z 1/6W
 1-215-400-00 s RES, METAL 130 1Z 1/6W
 1-215-401-00 s RES, METAL 150 1Z 1/6W
 1-215-402-00 s RES, METAL 160 1Z 1/6W

 1-215-403-00 s RES, METAL 180 1Z 1/6W
 1-215-404-00 s RES, METAL 200 1Z 1/6W
 1-215-405-00 s RES, METAL 220 1Z 1/6W
 1-215-406-00 s RES, METAL 240 1Z 1/6W
 1-215-407-00 s RES, METAL 270 1Z 1/6W

 1-215-408-00 s RES, METAL 300 1Z 1/6W
 1-215-409-00 s RES, METAL 330 1Z 1/6W
 1-215-410-00 s RES, METAL 360 1Z 1/6W
 1-215-411-00 s RES, METAL 390 1Z 1/6W
 1-215-412-00 s RES, METAL 430 1Z 1/6W

 1-215-413-00 s RES, METAL 470 1Z 1/6W
 1-215-414-00 s RES, METAL 510 1Z 1/6W
 1-215-415-00 s RES, METAL 560 1Z 1/6W
 1-215-416-00 s RES, METAL 620 1Z 1/6W
 1-215-417-00 s RES, METAL 680 1Z 1/6W

 1-215-418-00 s RES, METAL 750 1Z 1/6W
 1-215-419-00 s RES, METAL 820 1Z 1/6W
 1-215-420-00 s RES, METAL 910 1Z 1/6W
 1-215-421-00 s RES, METAL 1.0k 1Z 1/6W
 1-215-422-00 s RES, METAL 1.1k 1Z 1/6W

 1-215-423-00 s RES, METAL 1.2k 1Z 1/6W
 1-215-424-00 s RES, METAL 1.3k 1Z 1/6W
 1-215-425-00 s RES, METAL 1.5k 1Z 1/6W
 1-215-426-00 s RES, METAL 1.6k 1Z 1/6W
 1-215-427-00 s RES, METAL 1.8k 1Z 1/6W

 1-215-428-00 s RES, METAL 2.0k 1Z 1/6W
 1-215-429-00 s RES, METAL 2.2k 1Z 1/6W
 1-215-430-00 s RES, METAL 2.4k 1Z 1/6W
 1-215-431-00 s RES, METAL 2.7k 1Z 1/6W
 1-215-432-00 s RES, METAL 3.0k 1Z 1/6W

Part No. SP Description

1-215-433-00 s RES, METAL 3.3k 1Z 1/6W
 1-215-434-00 s RES, METAL 3.6k 1Z 1/6W
 1-215-435-00 s RES, METAL 3.9k 1Z 1/6W
 1-215-436-00 s RES, METAL 4.3k 1Z 1/6W
 1-215-437-00 s RES, METAL 4.7k 1Z 1/6W

 1-215-438-00 s RES, METAL 5.1k 1Z 1/6W
 1-215-439-00 s RES, METAL 5.6k 1Z 1/6W
 1-215-440-00 s RES, METAL 6.2k 1Z 1/6W
 1-215-441-00 s RES, METAL 6.8k 1Z 1/6W
 1-215-442-00 s RES, METAL 7.5k 1Z 1/6W

 1-215-443-00 s RES, METAL 8.2k 1Z 1/6W
 1-215-444-00 s RES, METAL 9.1k 1Z 1/6W
 1-215-445-00 s RES, METAL 10k 1Z 1/6W
 1-215-446-00 s RES, METAL 11k 1Z 1/6W
 1-215-447-00 s RES, METAL 12k 1Z 1/6W

 1-215-448-00 s RES, METAL 13k 1Z 1/6W
 1-215-449-00 s RES, METAL 15k 1Z 1/6W
 1-215-450-00 s RES, METAL 16k 1Z 1/6W
 1-215-451-00 s RES, METAL 18k 1Z 1/6W
 1-215-452-00 s RES, METAL 20k 1Z 1/6W

 1-215-453-00 s RES, METAL 22k 1Z 1/6W
 1-215-454-00 s RES, METAL 24k 1Z 1/6W
 1-215-455-00 s RES, METAL 27k 1Z 1/6W
 1-215-456-00 s RES, METAL 30k 1Z 1/6W
 1-215-457-00 s RES, METAL 33k 1Z 1/6W

 1-215-458-00 s RES, METAL 36k 1Z 1/6W
 1-215-459-00 s RES, METAL 39k 1Z 1/6W
 1-215-460-00 s RES, METAL 43k 1Z 1/6W
 1-215-461-00 s RES, METAL 47k 1Z 1/6W
 1-215-462-00 s RES, METAL 51k 1Z 1/6W

 1-215-463-00 s RES, METAL 56k 1Z 1/6W
 1-215-464-00 s RES, METAL 62k 1Z 1/6W
 1-215-465-00 s RES, METAL 68k 1Z 1/6W
 1-215-466-00 s RES, METAL 75k 1Z 1/6W
 1-215-467-00 s RES, METAL 82k 1Z 1/6W

 1-215-468-00 s RES, METAL 91k 1Z 1/6W
 1-215-469-00 s RES, METAL 100k 1Z 1/6W
 1-215-470-00 s RES, METAL 110k 1Z 1/6W
 1-215-471-00 s RES, METAL 120k 1Z 1/6W
 1-215-472-00 s RES, METAL 130k 1Z 1/6W

 1-215-473-00 s RES, METAL 150k 1Z 1/6W
 1-215-474-00 s RES, METAL 160k 1Z 1/6W
 1-215-475-00 s RES, METAL 180k 1Z 1/6W
 1-215-476-00 s RES, METAL 200k 1Z 1/6W
 1-215-477-00 s RES, METAL 220k 1Z 1/6W

 1-215-478-00 s RES, METAL 240k 1Z 1/6W
 1-215-479-00 s RES, METAL 270k 1Z 1/6W
 1-215-480-00 s RES, METAL 300k 1Z 1/6W
 1-215-481-00 s RES, METAL 330k 1Z 1/6W
 1-215-482-00 s RES, METAL 360k 1Z 1/6W

 1-215-483-00 s RES, METAL 390k 1Z 1/6W
 1-215-484-00 s RES, METAL 430k 1Z 1/6W
 1-215-485-00 s RES, METAL 470k 1Z 1/6W
 1-215-486-00 s RES, METAL 510k 1Z 1/6W
 1-215-487-00 s RES, METAL 560k 1Z 1/6W

 1-215-488-00 s RES, METAL 620k 1Z 1/6W
 1-215-489-00 s RES, METAL 680k 1Z 1/6W
 1-215-490-00 s RES, METAL 750k 1Z 1/6W
 1-215-491-00 s RES, METAL 820k 1Z 1/6W
 1-215-492-00 s RES, METAL 910k 1Z 1/6W

 1-215-493-00 s RES, METAL 1.0M 1Z 1/6W

Part No. SP Description

.CHIP

1-216-295-00	s	RES, CHIP	0	5%	1/10W
1-216-298-00	s	RES, CHIP	2.2	5%	1/10W
1-216-302-00	s	RES, CHIP	2.7	5%	1/10W
1-216-304-00	s	RES, CHIP	3.3	5%	1/10W
1-216-306-00	s	RES, CHIP	3.9	5%	1/10W
1-216-308-00	s	RES, CHIP	4.7	5%	1/10W
1-216-309-00	s	RES, CHIP	5.6	5%	1/10W
1-216-311-00	s	RES, CHIP	6.8	5%	1/10W
1-216-313-00	s	RES, CHIP	8.2	5%	1/10W
1-216-001-00	s	RES, CHIP	10	5%	1/10W
1-216-003-00	s	RES, CHIP	12	5%	1/10W
1-216-005-00	s	RES, CHIP	15	5%	1/10W
1-216-007-00	s	RES, CHIP	18	5%	1/10W
1-216-009-00	s	RES, CHIP	22	5%	1/10W
1-216-011-00	s	RES, CHIP	27	5%	1/10W
1-216-013-00	s	RES, CHIP	33	5%	1/10W
1-216-015-00	s	RES, CHIP	39	5%	1/10W
1-216-017-00	s	RES, CHIP	47	5%	1/10W
1-216-019-00	s	RES, CHIP	56	5%	1/10W
1-216-021-00	s	RES, CHIP	68	5%	1/10W
1-216-023-00	s	RES, CHIP	82	5%	1/10W
1-216-025-00	s	RES, CHIP	100	5%	1/10W
1-216-027-00	s	RES, CHIP	120	5%	1/10W
1-216-029-00	s	RES, CHIP	150	5%	1/10W
1-216-031-00	s	RES, CHIP	180	5%	1/10W
1-216-033-00	s	RES, CHIP	220	5%	1/10W
1-216-035-00	s	RES, CHIP	270	5%	1/10W
1-216-037-00	s	RES, CHIP	330	5%	1/10W
1-216-039-00	s	RES, CHIP	390	5%	1/10W
1-216-041-00	s	RES, CHIP	470	5%	1/10W
1-216-043-00	s	RES, CHIP	560	5%	1/10W
1-216-045-00	s	RES, CHIP	680	5%	1/10W
1-216-047-00	s	RES, CHIP	820	5%	1/10W
1-216-049-00	s	RES, CHIP	1k	5%	1/10W
1-216-051-00	s	RES, CHIP	1.2k	5%	1/10W
1-216-053-00	s	RES, CHIP	1.5k	5%	1/10W
1-216-055-00	s	RES, CHIP	1.8k	5%	1/10W
1-216-057-00	s	RES, CHIP	2.2k	5%	1/10W
1-216-059-00	s	RES, CHIP	2.7k	5%	1/10W
1-216-061-00	s	RES, CHIP	3.3k	5%	1/10W
1-216-063-00	s	RES, CHIP	3.9k	5%	1/10W
1-216-065-00	s	RES, CHIP	4.7k	5%	1/10W
1-216-067-00	s	RES, CHIP	5.6k	5%	1/10W
1-216-069-00	s	RES, CHIP	6.8k	5%	1/10W
1-216-071-00	s	RES, CHIP	8.2k	5%	1/10W
1-216-073-00	s	RES, CHIP	10k	5%	1/10W
1-216-075-00	s	RES, CHIP	12k	5%	1/10W
1-216-077-00	s	RES, CHIP	15k	5%	1/10W
1-216-079-00	s	RES, CHIP	18k	5%	1/10W
1-216-081-00	s	RES, CHIP	22k	5%	1/10W
1-216-083-00	s	RES, CHIP	27k	5%	1/10W
1-216-085-00	s	RES, CHIP	33k	5%	1/10W
1-216-087-00	s	RES, CHIP	39k	5%	1/10W
1-216-089-00	s	RES, CHIP	47k	5%	1/10W
1-216-091-00	s	RES, CHIP	56k	5%	1/10W

Part No. SP Description

1-216-093-00	s	RES, CHIP	68k	5%	1/10W
1-216-095-00	s	RES, CHIP	82k	5%	1/10W
1-216-097-00	s	RES, CHIP	100k	5%	1/10W
1-216-099-00	s	RES, CHIP	120k	5%	1/10W
1-216-101-00	s	RES, CHIP	150k	5%	1/10W
1-216-103-00	s	RES, CHIP	180k	5%	1/10W
1-216-105-00	s	RES, CHIP	220k	5%	1/10W
1-216-107-00	s	RES, CHIP	270k	5%	1/10W
1-216-109-00	s	RES, CHIP	330k	5%	1/10W
1-216-111-00	s	RES, CHIP	390k	5%	1/10W
1-216-113-00	s	RES, CHIP	470k	5%	1/10W
1-216-115-00	s	RES, CHIP	560k	5%	1/10W
1-216-117-00	s	RES, CHIP	680k	5%	1/10W
1-216-119-00	s	RES, CHIP	820k	5%	1/10W
1-216-121-00	s	RES, CHIP	1.0M	5%	1/10W
1-216-123-00	s	RES, CHIP	1.2M	5%	1/10W
1-216-125-00	s	RES, CHIP	1.5M	5%	1/10W
1-216-127-00	s	RES, CHIP	1.8M	5%	1/10W
1-216-129-00	s	RES, CHIP	2.2M	5%	1/10W
1-216-131-00	s	RES, CHIP	2.7M	5%	1/10W
1-216-133-00	s	RES, CHIP	3.3M	5%	1/10W

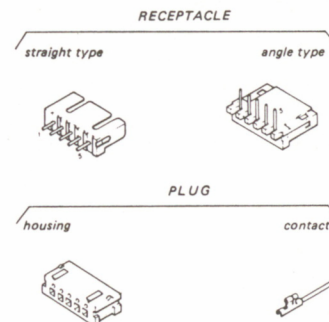
Part No. SP Description

CONNECTOR

1-564-001-11	o	RECEPTACLE 2P MALE (STRAIGHT TYPE)
1-564-012-11	o	RECEPTACLE 2P MALE (ANGLE TYPE)
1-562-147-11	o	HOUSING 2P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-002-11	o	RECEPTACLE 3P MALE (STRAIGHT TYPE)
1-564-013-11	o	RECEPTACLE 3P MALE (ANGLE TYPE)
1-562-148-11	o	HOUSING 3P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-003-11	o	RECEPTACLE 4P MALE (STRAIGHT TYPE)
1-564-014-11	o	RECEPTACLE 4P MALE (ANGLE TYPE)
1-562-149-11	o	HOUSING 4P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-004-11	o	RECEPTACLE 5P MALE (STRAIGHT TYPE)
1-564-015-11	o	RECEPTACLE 5P MALE (ANGLE TYPE)
1-562-150-11	o	HOUSING 5P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-005-11	o	RECEPTACLE 6P MALE (STRAIGHT TYPE)
1-564-016-11	o	RECEPTACLE 6P MALE (ANGLE TYPE)
1-562-151-11	o	HOUSING 6P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-006-11	o	RECEPTACLE 7P MALE (STRAIGHT TYPE)
1-564-017-11	o	RECEPTACLE 7P MALE (ANGLE TYPE)
1-562-152-11	o	HOUSING 7P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-007-11	o	RECEPTACLE 8P MALE (STRAIGHT TYPE)
1-564-018-11	o	RECEPTACLE 8P MALE (ANGLE TYPE)
1-562-153-11	o	HOUSING 8P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-008-41	o	RECEPTACLE 9P MALE (STRAIGHT TYPE)
1-564-019-11	o	RECEPTACLE 9P MALE (ANGLE TYPE)
1-562-154-11	o	HOUSING 9P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-009-11	o	RECEPTACLE 10P MALE (STRAIGHT TYPE)
1-564-020-11	o	RECEPTACLE 10P MALE (ANGLE TYPE)
1-562-155-11	o	HOUSING 10P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-010-21	o	RECEPTACLE 11P MALE (STRAIGHT TYPE)
1-564-021-11	o	RECEPTACLE 11P MALE (ANGLE TYPE)
1-562-156-11	o	HOUSING 11P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-011-11	o	RECEPTACLE 12P MALE (STRAIGHT TYPE)
1-564-022-11	o	RECEPTACLE 12P MALE (ANGLE TYPE)
1-562-157-11	o	HOUSING 12P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32

Part No. SP Description

1-564-683-11	o	RECEPTACLE 13P MALE (STRAIGHT TYPE)
1-564-743-11	o	RECEPTACLE 13P MALE (ANGLE TYPE)
1-562-627-11	o	HOUSING 13P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-069-11	o	RECEPTACLE 14P MALE (STRAIGHT TYPE)
1-564-630-11	o	RECEPTACLE 14P MALE (ANGLE TYPE)
1-562-185-11	o	HOUSING 14P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32
1-564-855-11	o	RECEPTACLE 15P MALE (STRAIGHT TYPE)
1-564-877-11	o	RECEPTACLE 15P MALE (ANGLE TYPE)
1-562-958-11	o	HOUSING 15P
1-564-026-21	o	CONTACT AWG24-30
1-564-681-21	o	CONTACT AWG32



PARTS CHANGE INFORMATION

.In this parts list, **) marked parts are design-changed.

.Applicable Serial No. are as follows:

- 1) Marked parts are for
Serial No. up to 12900
- 2) Marked parts are for
Serial No. up to 13750
- 3) Marked parts are for
Serial No. 12901 and higher
- 4) Marked parts are for
Serial No. 13751 and higher
- 5) Marked parts are for
Serial No. up to 14750
- 6) Marked parts are for
Serial No. 14751 and higher

Ref No. Parts No. SP Description

AC-65 BOARD

1-618-591-11 o PRINTED CIRCUIT BOARD, AC-65

1-533-189-11 o HOLDER, FUSE

 CN1 1-506-371-00 o 2P PLUG (L)

 F1 1-532-743-11 s FUSE, GLASS TUBE 2.0A 125V

CC-31 BOARD

1-622-255-11 o PRINTED CIRCUIT BOARD, CC-31

CC-32 BOARD

1-622-256-11 o PRINTED CIRCUIT BOARD, CC-32

IC1 8-719-940-86 s GP1L53 "CASSETTE IN DET"

CC-33 BOARD

1-622-257-11 o PRINTED CIRCUIT BOARD, CC-33

IC1 8-719-940-86 s GP1L53 "CASSETTE DOWN DET"

DC-31B BOARD

1-622-221-31 o PRINTED CIRCUIT BOARD, DC-31B

1-533-189-11 o HOLDER, FUSE
1-561-432-00 o CONNECTOR CONTACT
1-561-424-00 o SOCKET, CONNECTOR 5P

C2 1-161-379-00 s CERAMIC 0.01 20% 16V

CN005 1-562-738-11 o HOUSING, CONNECTOR 5P

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

F1 1-532-745-11 s FUSE, GLASS TUBE 3.15A 125V
 F2 1-532-744-11 s FUSE, GLASS TUBE 2.5A 125V
 F3 1-532-742-11 s FUSE, GLASS TUBE 1.6A 125V

IC1 8-759-938-15 s BA178M05 (ROHM)

DUS-92 BOARD

1-615-924-11 o PRINTED CIRCUIT BOARD, DUS-92

H1003 8-825-578-41 s ACE HEAD

DUS-147 BOARD

1-622-261-11 o PRINTED CIRCUIT BOARD, DUS-147

EC-28 BOARD

1-622-223-11 o PRINTED CIRCUIT BOARD, EC-28

H1002 8-825-514-20 s CTL ERASE (PP170-58)

IF-132 BOARD

A-6717-450-A o MOUNTED CIRCUIT BOARD, IF-132

C2 1-161-021-11 s CERAMIC 0.047 10% 25V
 C4 1-161-021-11 s CERAMIC 0.047 10% 25V
 C6 1-162-290-31 s CERAMIC 470PF 10% 50V
 C7 1-161-013-00 s CERAMIC 0.01 10% 25V
 C9 1-162-290-31 s CERAMIC 470PF 10% 50V

C10 1-162-290-31 s CERAMIC 470PF 10% 50V
 C12 1-161-013-00 s CERAMIC 0.01 10% 25V
 C13 1-161-013-00 s CERAMIC 0.01 10% 25V
 C14 1-161-013-00 s CERAMIC 0.01 10% 25V
 C15 1-162-211-31 s CERAMIC 33PF 5% 50V

C16 1-162-211-31 s CERAMIC 33PF 5% 50V
 C17 1-161-043-00 s CERAMIC 0.0022 10% 25V
 C18 1-161-379-00 s CERAMIC 0.01 30% 16V
 C19 1-161-379-00 s CERAMIC 0.01 30% 16V
 C20 1-161-379-00 s CERAMIC 0.01 30% 16V

C21 1-161-379-00 s CERAMIC 0.01 30% 16V
 C22 1-161-379-00 s CERAMIC 0.01 30% 16V
 C23 1-161-379-00 s CERAMIC 0.01 30% 16V
 C24 1-161-379-00 s CERAMIC 0.01 30% 16V
 C26 1-162-294-31 s CERAMIC 0.001 10% 50V

Ref No. Parts No. SP Description

CN1021 1-566-615-11 s CONNECTOR, SQUARE 33P "REMOTE"
 CN1022 1-562-900-11 s JACK (SMALL TYPE) "RX DATA"

D1 8-719-911-19 s 1SS119
 D2 8-719-911-19 s 1SS119
 D3 8-719-911-19 s 1SS119
 D4 8-719-911-19 s 1SS119
 D5 8-719-911-19 s 1SS119

D6 8-719-911-19 s 1SS119
 D7 8-719-911-19 s 1SS119
 D8 8-719-911-19 s 1SS119
 D9 8-719-911-19 s 1SS119
 D10 8-719-911-19 s 1SS119

D11 8-719-911-19 s 1SS119
 D12 8-719-911-19 s 1SS119
 D13 8-719-911-19 s 1SS119
 D14 8-719-911-19 s 1SS119
 D15 8-719-911-19 s 1SS119

D16 8-719-911-19 s 1SS119
 D17 8-719-911-19 s 1SS119
 D18 8-719-911-19 s 1SS119
 D19 8-719-911-19 s 1SS119
 D20 8-719-911-19 s 1SS119

D21 8-719-911-19 s 1SS119
 D22 8-719-911-19 s 1SS119

IC1 8-759-600-61 s M54529AP (MITSUBISHI)
 IC2 8-759-600-61 s M54529AP (MITSUBISHI)
 IC3 8-759-600-61 s M54529AP (MITSUBISHI)
 IC4 8-759-600-61 s M54529AP (MITSUBISHI)
 IC5 8-759-345-38 s HD14538BP (HITACHI)

IC6 8-759-207-73 s TC4030BPHB (TOSHIBA)
 IC7 8-759-240-69 s TC4069UBP (TOSHIBA)
 IC8 8-759-945-42 s MB88505-548M (FUJITSU)

Q1 8-729-900-89 s DTC144ES
 Q2 8-729-900-89 s DTC144ES
 Q3 8-729-900-89 s DTC144ES
 Q4 8-729-900-89 s DTC144ES
 Q5 8-729-900-89 s DTC144ES

R11 1-247-895-00 s CARBON 470k 5% 1/4W
 R37 1-247-887-00 s CARBON 220k 5% 1/4W
 R62 1-247-891-00 s CARBON 330k 5% 1/4W
 R73 1-247-887-00 s CARBON 220k 5% 1/4W

X1 1-567-143-00 s CERAMIC, 6MHz

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

KY-105B BOARD

A-6717-452-A o MOUNTED CIRCUIT BOARD, KY-105B

BT1 1-528-227-11 o BATTERY, LITHIUM (CR-2032)

C1 1-162-211-31 s CERAMIC 33PF 5% 50V
 C2 1-162-211-31 s CERAMIC 33PF 5% 50V
 C4 1-161-021-11 s CERAMIC 0.047 10% 25V
 C13 1-125-443-11 s ELECT 0.047 5.5V

CP1 1-560-914-00 s CONNECTOR POST 2P

D1 8-719-911-19 s 1SS119
 D2 8-719-911-19 s 1SS119
 D4 8-719-904-55 s GL-5HD5
 D5 8-719-911-19 s 1SS119
 D6 8-719-911-19 s 1SS119

D7 8-719-911-19 s 1SS119
 D8 8-719-904-55 s GL-5HD5
 D9 8-719-911-19 s 1SS119
 D10 8-719-911-19 s 1SS119
 3) D11 8-719-802-11 s TLUG154

D12 8-719-911-19 s 1SS119
 D14 8-719-911-19 s 1SS119
 D15 8-719-911-19 s 1SS119
 D18 8-719-904-55 s GL-5HD5
 D21 8-719-904-55 s GL-5HD5

D22 8-719-911-19 s 1SS119
 D23 8-719-911-19 s 1SS119
 D24 8-719-911-19 s 1SS119
 D25 8-719-904-55 s GL-5HD5
 D26 8-719-911-19 s 1SS119

D29 8-719-802-24 s TLUY154
 D30 8-719-802-24 s TLUY154
 3) D31 8-719-802-11 s TLUG154
 5) D32 8-719-911-19 s 1SS119
 5) D33 8-719-911-19 s 1SS119

IC1 8-759-645-17 s M54517P (MITSUBISHI)
 IC2 8-759-970-00 s MB88525-191M (FUJITSU)

L1 1-407-488-00 s 470uH

ND701 1-807-441-21 s LED BLOCK

Ref No. Parts No. SP Description

Q1 8-729-900-65 s DTA144ES
 Q2 8-729-900-65 s DTA144ES
 Q3 8-729-900-65 s DTA144ES
 Q4 8-729-900-65 s DTA144ES
 Q5 8-729-900-65 s DTA144ES

Q6 8-729-900-65 s DTA144ES
 Q7 8-729-117-54 s 2SA1175
 Q8 8-729-117-54 s 2SA1175
 Q9 8-729-117-54 s 2SA1175
 Q10 8-729-117-54 s 2SA1175

Q11 8-729-117-54 s 2SA1175
 Q13 8-729-117-54 s 2SA1175
 Q14 8-729-117-54 s 2SA1175
 Q15 8-729-900-65 s DTA144ES
 Q16 8-729-900-65 s DTA144ES

Q19 8-729-900-65 s DTA144ES
 Q20 8-729-900-65 s DTA144ES
 Q21 8-729-900-65 s DTA144ES
 Q22 8-729-900-65 s DTA144ES
 Q23 8-729-900-65 s DTA144ES

Q24 8-729-900-65 s DTA144ES
 6) Q40 8-729-201-05 s 2SC2878-B
 6) Q41 8-729-201-05 s 2SC2878-B

R75 1-247-736-11 s CARBON 56 5% 1/2W

S1 1-570-145-11 s LEVER SLIDE "FRAME/CTL"
 S2 1-553-739-21 s KEY "RESET"
 S3 1-552-539-00 s KEY "F.SEARCH"
 S4 1-553-739-21 s KEY "MARK A"
 S5 1-553-739-21 s KEY "MARK B"

S6 1-552-539-00 s KEY "R.SEARCH"
 S7 1-516-995-00 s LEVER SLIDE "PROGRAM OPERATION"
 S8 1-552-539-00 s KEY "PAUSE"
 S10 1-552-539-00 s KEY "FF"
 S12 1-552-539-00 s KEY "PLAY"

S13 1-552-539-00 s KEY "REW"
 S14 1-552-539-00 s KEY "EJECT"
 S15 1-552-539-00 s KEY "STOP"
 S18 1-516-298-00 s LEVER SLIDE "AUDIO MONITOR"

X1 1-567-143-00 s CERAMIC, 6MHz

LM-13 BOARD

1-618-600-11 o PRINTED CIRCUIT BOARD, LM-13

C1 1-130-471-00 s PE TEREPHTHALATE 0.001 5% 50V
 C2 1-130-471-00 s PE TEREPHTHALATE 0.001 5% 50V

M1003 1-541-376-11 s DC (DNR-4700A) "THREADING"

Parts that are not listed in the "reference number order list"
 are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

LP-41 BOARD

1-623-101-11 o PRINTED CIRCUIT BOARD, LP-41

D1 8-719-800-89 s TLY255
 D2 8-719-800-89 s TLY255
 D3 8-719-800-89 s TLY255

R1 1-247-706-11 s CARBON 330 5% 1/4W
 R2 1-247-706-11 s CARBON 330 5% 1/4W
 R3 1-247-706-11 s CARBON 330 5% 1/4W

PD-40A BOARD

A-6725-571-A o MOUNTED CIRCUIT BOARD, PD-40A

D1 8-719-200-02 s 10E-2
 D2 8-719-200-02 s 10E-2
 D3 8-719-200-02 s 10E-2
 D4 8-719-200-02 s 10E-2
 D5 8-719-200-02 s 10E-2

D6 8-719-200-02 s 10E-2
 D7 8-719-200-02 s 10E-2
 D8 8-719-200-02 s 10E-2
 D10 8-719-200-02 s 10E-2
 D11 8-719-200-02 s 10E-2

D12 8-719-200-02 s 10E-2
 D13 8-719-200-02 s 10E-2

Q1 8-729-811-11 s 2SD1111
 Q2 8-729-178-55 s 2SC2785-E
 Q3 8-729-889-40 s 2SD894
 Q4 8-729-811-11 s 2SD1111
 Q5 8-729-178-55 s 2SC2785-E

Q6 8-729-889-40 s 2SD894
 Q8 8-729-811-11 s 2SD1111
 Q9 8-729-178-55 s 2SC2785-E
 Q10 8-729-889-40 s 2SD894
 Q11 8-729-811-11 s 2SD1111

Q12 8-729-178-55 s 2SC2785-E
 Q13 8-729-178-55 s 2SC2785-E
 Q14 8-729-889-40 s 2SD894

R6 1-532-685-00 s LINK, IC
 R12 1-532-685-00 s LINK, IC
 R19 1-532-685-00 s LINK, IC
 R25 1-532-685-00 s LINK, IC

Ref No. Parts No. SP Description

PD-41 BOARD

A-6725-570-A o MOUNTED CIRCUIT BOARD, PD-41

D1 8-719-200-02 s 10E-2
 D2 8-719-200-02 s 10E-2
 D3 8-719-200-02 s 10E-2
 D4 8-719-200-02 s 10E-2
 D5 8-719-200-02 s 10E-2

D6 8-719-200-02 s 10E-2

Q1 8-729-811-11 s 2SD1111
 Q2 8-729-178-55 s 2SC2785-E
 Q3 8-729-889-40 s 2SD894
 Q4 8-729-811-11 s 2SD1111
 Q5 8-729-178-55 s 2SC2785-E

Q6 8-729-889-40 s 2SD894

R6 1-532-685-00 s LINK, IC
 R12 1-532-685-00 s LINK, IC

PH-5 BOARD

1-603-737-00 o PRINTED CIRCUIT BOARD, PH-5

D1 8-719-951-04 s BR5104S

Q1 8-729-810-22 s SPS102

PT-9 BOARD

1-605-018-00 o PRINTED CIRCUIT BOARD, PT-9

Q1 8-729-377-13 s 2SA771-Y

PTC-33 BOARD

1-622-258-11 o PRINTED CIRCUIT BOARD, PTC-33

IC1 8-719-940-86 s GP1L53 "THREAD END DET"
 IC2 8-719-940-86 s GP1L53 "UNTHREAD END DET"

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

PTC-34 BOARD

1-622-259-11 o PRINTED CIRCUIT BOARD, PTC-34

IC1 8-719-940-86 s GP1L53 "FR UNTHREED END DET"

PTC-35 BOARD

1-622-218-11 o PRINTED CIRCUIT BOARD, PTC-35

IC1A 8-719-940-86 s GP1L53 "TAKE-UP ROTATION DET"

IC1B 8-719-940-86 s GP1L53 "SUPPLY ROTATION DET"

RM-39 BOARD

1-618-873-11 o PRINTED CIRCUIT BOARD, RM-39

C1 1-101-006-00 s CERAMIC 0.047 50V

C2 1-101-006-00 s CERAMIC 0.047 50V

L1 1-410-623-11 s 4.7uH

L2 1-410-623-11 s 4.7uH

M1006 8-835-178-01 s DC FN30-T26N1E "REEL"

SE-46 BOARD

1-618-599-11 o PRINTED CIRCUIT BOARD, SE-46

PC1 1-806-232-21 s DETECTOR MB-1102/S.N

Ref No. Parts No. SP Description

SV-93B BOARD

A-6715-366-A o MOUNTED CIRCUIT BOARD, SV-93B

C3 1-124-499-11 s ELECT 1 20% 50V

C6 1-161-377-00 s CERAMIC 0.0047 30% 16V

C7 1-161-374-11 s CERAMIC 0.0015 30% 16V

C8 1-130-493-00 s MYLAR 0.068 5% 50V

C10 1-131-350-00 s TANTALUM 3.3 10% 35V

C12 1-162-299-21 s CERAMIC 0.0068 30% 16V

C14 1-161-021-11 s CERAMIC 0.047 10% 25V

C17 1-161-057-00 s CERAMIC 0.033 10% 25V

C18 1-161-013-00 s CERAMIC 0.01 10% 25V

C19 1-161-013-00 s CERAMIC 0.01 10% 25V

C104 1-162-215-31 s CERAMIC 47PF 5% 50V

C106 1-161-047-00 s CERAMIC 0.0047 10% 25V

C111 1-161-042-00 s CERAMIC 0.0018 10% 25V

C112 1-161-042-00 s CERAMIC 0.0018 10% 25V

C116 1-162-286-31 s CERAMIC 220PF 10% 50V

C120 1-162-288-31 s CERAMIC 330PF 10% 50V

C203 1-162-211-31 s CERAMIC 33PF 5% 50V

C204 1-162-211-31 s CERAMIC 33PF 5% 50V

C301 1-161-013-00 s CERAMIC 0.01 10% 25V

C302 1-161-040-00 s CERAMIC 0.0012 10% 25V

C303 1-130-483-00 s MYLAR 0.01 5% 50V

C306 1-162-286-31 s CERAMIC 220PF 10% 50V

C307 1-162-288-31 s CERAMIC 330PF 10% 50V

C308 1-161-013-00 s CERAMIC 0.01 10% 25V

C309 1-161-013-00 s CERAMIC 0.01 10% 25V

C312 1-124-499-11 s ELECT 1 20% 50V

C403 1-130-491-00 s MYLAR 0.047 5% 50V

C409 1-161-379-00 s CERAMIC 0.01 30% 16V

C418 1-162-282-31 s CERAMIC 100PF 10% 50V

C422 1-124-464-11 s ELECT 0.22 20% 50V

C423 1-162-289-31 s CERAMIC 390PF 10% 50V

C430 1-124-463-00 s ELECT 0.1 20% 50V

C507 1-162-282-31 s CERAMIC 100PF 10% 50V

C702 1-161-379-00 s CERAMIC 0.01 30% 16V

C703 1-161-379-00 s CERAMIC 0.01 30% 16V

C704 1-161-379-00 s CERAMIC 0.01 30% 16V

C705 1-161-379-00 s CERAMIC 0.01 30% 16V

C709 1-161-379-00 s CERAMIC 0.01 30% 16V

C710 1-161-379-00 s CERAMIC 0.01 30% 16V

C711 1-161-379-00 s CERAMIC 0.01 30% 16V

C712 1-161-379-00 s CERAMIC 0.01 30% 16V

C714 1-161-379-00 s CERAMIC 0.01 30% 16V

C716 1-161-379-00 s CERAMIC 0.01 30% 16V

C718 1-161-379-00 s CERAMIC 0.01 30% 16V

C719 1-161-039-00 s CERAMIC 0.001 10% 25V

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
D1	8-719-911-19	s	1SS119
D2	8-719-911-19	s	1SS119
D3	8-719-911-19	s	1SS119
D5	8-719-911-19	s	1SS119
D7	8-719-911-55	s	U05G
D101	8-719-911-19	s	1SS119
D103	8-719-911-19	s	1SS119
D104	8-719-911-19	s	1SS119
D105	8-719-911-19	s	1SS119
D106	8-719-911-19	s	1SS119
D107	8-719-911-19	s	1SS119
D108	8-719-911-19	s	1SS119
D109	8-719-911-19	s	1SS119
D110	8-719-911-19	s	1SS119
D111	8-719-911-19	s	1SS119
D112	8-719-911-19	s	1SS119
D113	8-719-911-19	s	1SS119
D204	8-719-911-19	s	1SS119
D205	8-719-911-19	s	1SS119
D206	8-719-911-19	s	1SS119
D207	8-719-911-19	s	1SS119
D210	8-719-100-15	s	RD3.0E-B2
D211	8-719-911-19	s	1SS119
D303	8-719-911-19	s	1SS119
D401	8-719-911-19	s	1SS119
D402	8-719-911-19	s	1SS119
D405	8-719-911-19	s	1SS119
D406	8-719-911-19	s	1SS119
D407	8-719-911-19	s	1SS119
D408	8-719-911-19	s	1SS119
D409	8-719-911-19	s	1SS119
D410	8-719-911-19	s	1SS119
D411	8-719-911-19	s	1SS119
4) D600	8-719-911-19	s	1SS119

IC1	8-759-132-40	s	UPC324C (NEC)
IC2	8-759-700-08	s	NJM4558S (JRC)
IC3	8-759-705-58	s	NJM4558D-D (JRC)
IC5	8-759-140-53	s	UPD4053BC (NEC)
IC8	8-759-132-40	s	UPC324C (NEC)
IC9	8-759-132-40	s	UPC324C (NEC)
IC10	8-759-133-90	s	UPC339C (NEC)
IC11	8-759-240-30	s	TC4030BP (TOSHIBA)
IC12	8-759-135-80	s	UPC358C (NEC)
IC13	8-759-140-53	s	UPD4053BC (NEC)
IC14	8-759-205-76	s	TC504013BP (TOSHIBA)
IC15	8-759-200-01	s	TC4001UBP (TOSHIBA)
IC17	8-751-941-05	s	CX-194B-5 (SONY)
IC18	8-759-945-41	s	MB88505-547M (FUJITSU)
IC19	8-759-240-30	s	TC4030BP (TOSHIBA)
IC20	8-759-140-53	s	UPD4053BC (NEC)
IC21	8-743-915-10	s	BX-3915A (SONY)

Ref No.	Parts No.	SP	Description
Q1	8-729-178-55	s	2SC2785-E
Q2	8-729-117-54	s	2SA1175-K
Q3	8-729-376-84	s	2SA768-G
Q4	8-729-804-91	s	2SD1682-S
Q5	8-729-177-43	s	2SD774-4
2) Q101	8-729-900-83	s	DTC124XS
4) Q101	8-729-900-89	s	DTC144ES
Q102	8-729-178-55	s	2SC2785-E
Q103	8-729-900-83	s	DTC124XS
Q104	8-729-117-54	s	2SA1175-K
Q106	8-729-178-55	s	2SC2785-E
Q107	8-729-105-72	s	2SK523-L1
Q108	8-729-900-83	s	DTC124XS
Q109	8-729-900-89	s	DTC144ES
Q110	8-729-178-55	s	2SC2785-E
Q111	8-729-376-84	s	2SA768-G
Q112	8-729-117-54	s	2SA1175-K
Q113	8-729-804-91	s	2SD1682-S
Q114	8-729-900-67	s	DTA124XS
Q201	8-729-900-83	s	DTC124XS
Q202	8-729-900-83	s	DTC124XS
Q203	8-729-900-83	s	DTC124XS
Q204	8-729-900-83	s	DTC124XS
Q205	8-729-900-83	s	DTC124XS
Q206	8-729-900-83	s	DTC124XS
Q304	8-729-178-55	s	2SC2785-E
Q401	8-729-178-55	s	2SC2785
Q403	8-729-178-55	s	2SC2785
Q404	8-729-178-55	s	2SC2785
Q411	8-729-178-55	s	2SC2785-E
Q412	8-729-178-55	s	2SC2785-E
Q501	8-729-600-24	s	2SC403SP-51

R12	1-247-895-00	s	CARBON	470k	5%	1/4W
R13	1-247-881-00	s	CARBON	120k	5%	1/4W
R17	1-247-895-00	s	CARBON	470k	5%	1/4W
R35	1-247-891-00	s	CARBON	330k	5%	1/4W

△ R42 1-207-621-00 s WIREWOUND 1.5 10% 3W

R125	1-247-887-00	s	CARBON	220k	5%	1/4W
R147	1-247-895-00	s	CARBON	470k	5%	1/4W
R151	1-247-891-00	s	CARBON	330k	5%	1/4W
R162	1-247-895-00	s	CARBON	470k	5%	1/4W
R172	1-247-891-00	s	CARBON	330k	5%	1/4W

R176	1-247-887-00	s	CARBON	220k	5%	1/4W
R178	1-247-895-00	s	CARBON	470k	5%	1/4W
R260	1-247-895-00	s	CARBON	470k	5%	1/4W
R306	1-247-895-00	s	CARBON	470k	5%	1/4W
R311	1-247-895-00	s	CARBON	470k	5%	1/4W

△ R461 1-207-636-00 s WIREWOUND 100 10% 3W

R507	1-247-849-00	s	CARBON	5.6k	5%	1/4W
------	--------------	---	--------	------	----	------

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
RV1	1-228-994-00	s	VAR, CARBON 10k
RV3	1-228-990-00	s	VAR, CARBON 1k
RV100	1-228-993-00	s	VAR, CARBON 4.7k
RV101	1-228-994-00	s	VAR, CARBON 10k
RV102	1-228-994-00	s	VAR, METAL GLAZE 10k

RV106	1-228-993-00	s	VAR, CARBON 4.7k
RV107	1-228-995-00	s	VAR, CARBON 22k
RV201	1-228-990-00	s	VAR, CARBON 1k
RV401	1-228-996-00	s	VAR, CARBON 47k
RV403	1-228-996-00	s	VAR, CARBON 47k

RV405	1-228-996-00	s	VAR, CARBON 47k
RV407	1-228-997-00	s	VAR, CARBON 100k

X1	1-527-376-00	s	CRYSTAL 3.58MHz
X2	1-527-734-00	s	CRYSTAL 6MHz

SY-106B BOARD

1)	A-6717-451-A	o	MOUNTED CIRCUIT BOARD, SY-106B
3)	A-6717-451-B	o	MOUNTED CIRCUIT BOARD, SY-106B

C2	1-161-021-11	s	CERAMIC 0.047 10% 25V
C3	1-161-013-00	s	CERAMIC 0.01 10% 25V
C4	1-161-041-00	s	CERAMIC 0.0015 10% 25V
C5	1-161-013-00	s	CERAMIC 0.01 10% 25V
C6	1-161-055-00	s	CERAMIC 0.022 10% 25V

C10	1-162-286-31	s	CERAMIC 220PF 10% 50V
C11	1-124-499-11	s	ELECT 1 20% 50V
C14	1-162-286-31	s	CERAMIC 220PF 10% 50V
C15	1-161-020-11	s	CERAMIC 0.039 10% 25V
C17	1-124-499-11	s	ELECT 1 20% 50V

C18	1-131-358-00	s	TANTALUM 6.8 10% 25V
C19	1-161-013-00	s	CERAMIC 0.01 10% 25V
C20	1-161-057-00	s	CERAMIC 0.033 10% 25V
C21	1-161-013-00	s	CERAMIC 0.01 10% 25V
C22	1-162-216-31	s	CERAMIC 51PF 5% 50V

C23	1-124-499-11	s	ELECT 1 20% 50V
C24	1-161-021-11	s	CERAMIC 0.047 10% 25V
C30	1-124-499-11	s	ELECT 1 20% 50V
C31	1-161-039-00	s	CERAMIC 0.001 10% 25V
C32	1-162-211-31	s	CERAMIC 33PF 5% 50V

C33	1-161-021-11	s	CERAMIC 0.047 10% 25V
C34	1-161-039-00	s	CERAMIC 0.001 10% 25V
C36	1-161-021-11	s	CERAMIC 0.047 10% 25V
C37	1-162-211-31	s	CERAMIC 33PF 5% 50V
C38	1-161-055-00	s	CERAMIC 0.022 10% 25V

C42	1-161-021-11	s	CERAMIC 0.047 10% 25V
C46	1-162-290-31	s	CERAMIC 470PF 10% 50V
C47	1-162-210-31	s	CERAMIC 30PF 5% 50V
C48	1-162-210-31	s	CERAMIC 30PF 5% 50V
C49	1-124-499-11	s	ELECT 1 20% 50V

C50	1-124-499-11	s	ELECT 1 20% 50V
C55	1-162-290-31	s	CERAMIC 470PF 10% 50V

Ref No.	Parts No.	SP	Description
CN507	1-506-821-11	o	HOUSING, BOARD IN CONNECTOR 12P
	1-563-186-11	o	HOUSING, CONNECTOR 12P
CN508	1-506-821-11	o	HOUSING, BOARD IN CONNECTOR 12P
	1-563-186-11	o	HOUSING, CONNECTOR 12P

D1	8-719-911-19	s	1SS119
D2	8-719-911-19	s	1SS119
D3	8-719-911-19	s	1SS119
D4	8-719-911-19	s	1SS119
D5	8-719-911-19	s	1SS119

D6	8-719-911-19	s	1SS119
D7	8-719-911-19	s	1SS119
D8	8-719-911-19	s	1SS119
D9	8-719-911-19	s	1SS119
D10	8-719-911-19	s	1SS119

D11	8-719-911-19	s	1SS119
D12	8-719-911-19	s	1SS119
D13	8-719-911-19	s	1SS119
D14	8-719-911-19	s	1SS119
D15	8-719-911-19	s	1SS119

D16	8-719-911-19	s	1SS119
D17	8-719-911-19	s	1SS119
D18	8-719-911-19	s	1SS119
D20	8-719-911-19	s	1SS119
D21	8-719-911-55	s	U05-G

D22	8-719-911-55	s	U05-G
D23	8-719-911-55	s	U05-G
D24	8-719-911-19	s	1SS119
D25	8-719-911-19	s	1SS119
D26	8-719-911-19	s	1SS119

D31	8-719-911-19	s	1SS119
D32	8-719-911-19	s	1SS119
D33	8-719-911-19	s	1SS119

IC1	8-759-145-58	s	UPC4558C (NEC)
IC2	8-759-145-58	s	UPC4558C (NEC)
IC3	8-759-345-38	s	HD14538BP (HITACHI)
IC4	8-759-135-80	s	UPC358C (NEC)
IC5	8-759-145-58	s	UPC4558C (NEC)

1) IC7	8-759-945-39	s	MB88525-177M (FUJITSU)
3) IC7	8-759-970-94	s	MB88525-184M (FUJITSU)
IC8	8-759-729-03	s	NJM2903D (JRC)
IC9	8-759-600-24	s	M54543L (MITSUBISHI)
IC10	8-759-600-24	s	M54543L (MITSUBISHI)

IC11	8-759-240-69	s	TC4069UBP (TOSHIBA)
1) IC12	8-759-945-43	s	MB88505-549M (FUJITSU)
3) IC12	8-759-970-93	s	MB88505-571M (FUJITSU)
IC13	8-759-220-00	s	TC40H000P (TOSHIBA)
IC14	8-759-913-99	s	MB88201-173N (FUJITSU)

IC15	8-759-729-03	s	NJM2903D (JRC)
IC18	8-759-240-69	s	TC4069UBP (TOSHIBA)
IC19	8-759-345-38	s	HD14538BP (HITACHI)
IC20	8-759-202-55	s	TC74HC244P (TOSHIBA)

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

Q1 8-729-177-43 s 2SD774-4
 Q3 8-729-889-40 s 2SD894
 Q4 8-729-178-55 s 2SC2785-E
 Q5 8-729-178-55 s 2SC2785-E
 Q6 8-729-178-55 s 2SC2785-E

Q7 8-729-178-55 s 2SC2785-E
 Q8 8-729-178-55 s 2SC2785-E
 Q9 8-729-900-89 s DTC144ES
 Q10 8-729-117-54 s 2SA1175-K
 Q11 8-729-900-89 s DTC144ES

Q12 8-729-175-54 s 2SA1175-K
 Q13 8-729-900-89 s DTC144ES
 Q14 8-729-900-89 s DTC144ES
 Q15 8-729-178-55 s 2SC2785-E
 Q16 8-729-178-55 s 2SC2785-E

Q17 8-729-900-89 s DTC144ES
 Q18 8-729-900-89 s DTC144ES
 Q19 8-729-900-89 s DTC144ES
 Q20 8-729-178-55 s 2SC2785-E
 Q23 8-729-900-89 s DTC144ES

Q24 8-729-900-89 s DTC144ES
 Q26 8-729-178-55 s 2SC2785-E
 Q27 8-729-178-55 s 2SC2785-E
 Q28 8-729-117-54 s 2SA1175-K
 Q29 8-729-178-55 s 2SC2785-E

Q31 8-729-178-55 s 2SC2785-E
 Q35 8-729-398-62 s 2SC1986
 Q36 8-729-900-89 s DTC144ES
 Q37 8-729-900-89 s DTC144ES
 Q38 8-729-900-89 s DTC144ES

Q44 8-729-811-11 s 2SD1111

△ R11 1-207-674-00 s WIREWOUND 4.7 10% 6W

R13 1-247-895-00 s CARBON 470k 5% 1/4W
 R24 1-247-895-00 s CARBON 470k 5% 1/4W
 R32 1-247-891-00 s CARBON 330k 5% 1/4W
 R33 1-247-883-00 s CARBON 150k 5% 1/4W

R38 1-247-891-00 s CARBON 330k 5% 1/4W
 R40 1-247-887-00 s CARBON 220k 5% 1/4W
 R41 1-247-701-11 s CARBON 120 5% 1/4W
 R47 1-247-881-00 s CARBON 120k 5% 1/4W
 R48 1-247-881-00 s CARBON 120k 5% 1/4W

R76 1-247-887-00 s CARBON 220k 5% 1/4W
 R85 1-247-887-00 s CARBON 220k 5% 1/4W
 R112 1-247-700-11 s CARBON 100 5% 1/4W
 R159 1-214-853-00 s METAL 360 1% 1/2W
 R160 1-214-852-00 s METAL 330 1% 1/2W

R189 1-247-887-00 s CARBON 220k 5% 1/4W
 R192 1-532-637-00 s LINK, IC
 R201 1-532-605-00 s LINK, IC
 R204 1-532-637-00 s LINK, IC
 R300 1-532-769-21 s FUSE, MICRO 0.2A

Ref No. Parts No. SP Description

RV1 1-230-722-11 s VAR, CARBON 22k
 RV2 1-230-720-11 s VAR, CARBON 4.7k
 RV3 1-230-720-11 s VAR, CARBON 4.7k
 RV4 1-230-722-11 s VAR, CARBON 22k

SW1 1-552-509-00 s DIP

X1 1-567-143-00 s CERAMIC 6MHz
 X2 1-567-192-11 s CERAMIC 4MHz,

TG-22 BOARD

1-618-597-11 o PRINTED CIRCUIT BOARD, TG-22

D1 8-719-904-55 s GL-5HD5

UR-14 BOARD

△ 1-413-248-11 s SWITCHING REGULATOR, UR-14

△ C101 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C102 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C103 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C104 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C105 1-136-212-00 s MYLAR 0.1 20% 250V

C106 1-136-212-00 s MYLAR 0.1 20% 250V
 C107 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C108 1-161-742-00 s CERAMIC 2200PF 20% 400V

C109 1-124-961-00 s ELECT 220 20% 200V
 C110 1-124-023-00 s ELECT 4.7 20% 350V

C111 1-124-023-00 s ELECT 4.7 20% 350V
 C112 1-124-549-00 s ELECT 100 20% 10V
 C113 1-124-961-00 s ELECT 220 20% 200V
 C114 1-124-549-00 s ELECT 100 20% 10V
 C201 1-108-413-00 s MYLAR 2200PF 10% 200V

C202 1-108-413-00 s MYLAR 2200PF 10% 200V
 C203 1-161-825-11 s CERAMIC 220PF 10% 500V
 C204 1-161-825-11 s CERAMIC 220PF 10% 500V
 C205 1-161-825-11 s CERAMIC 220PF 10% 500V
 C206 1-161-825-11 s CERAMIC 220PF 10% 500V

C207 1-123-357-00 s ELECT 22 20% 50V
 C209 1-108-413-00 s MYLAR 2200PF 10% 200V
 C210 1-136-153-00 s MYLAR 0.01 5% 50V
 C211 1-130-516-00 s MYLAR 0.01 5% 50V
 C212 1-124-556-00 s ELECT 2200 20% 16V

C213 1-124-556-00 s ELECT 2200 20% 16V
 C214 1-124-556-00 s ELECT 2200 20% 16V
 C215 1-124-556-00 s ELECT 2200 20% 16V
 C216 1-123-326-00 s ELECT 3300 20% 16V
 C217 1-123-332-00 s ELECT 47 20% 50V

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
C651	1-124-445-00	s	ELECT 100 20% 16V
C652	1-130-591-11	s	MYLAR 3300PF 2% 100V
C653	1-136-141-00	s	MYLAR 1000PF 10% 50V
C654	1-136-165-00	s	MYLAR 0.1 5% 50V
C655	1-123-318-00	s	ELECT 33 16V

⚠	CN101	1-560-436-00	o	RECEPTACLE, 3P
		1-561-218-11	o	HOUSING, 3P
		1-561-254-11	o	CONTACT

CN201	1-560-438-00	o	RECEPTACLE, 5P
	1-561-424-11	o	HOUSING, 5P
	1-561-254-11	o	CONTACT

D101	8-719-300-00	s	LB-156
D201	8-719-908-00	s	ESAC33-02CS
D202	8-719-908-00	s	ESAC33-02CS
D203	8-719-900-93	s	V09C
D204	8-719-900-93	s	V09C

D205	8-719-815-55	s	181555
D206	8-719-100-61	s	RD11EB2
D208	8-719-101-67	s	RD7.5EL2
D209	8-719-100-30	s	RD5.1EB2
D210	8-719-100-30	s	RD5.1EB2

D651	8-719-200-02	s	10E-2
D652	8-719-100-70	s	RD15EB1
D653	8-719-815-55	s	181555

FB101	1-543-060-00	s	CORE
FB102	1-543-060-00	s	CORE
FB201	1-543-060-00	s	CORE
FB202	1-543-060-00	s	CORE
FB203	1-543-060-00	s	CORE

FB204	1-543-060-00	s	CORE
FB205	1-543-060-00	s	CORE
FB206	1-543-060-00	s	CORE
FB207	1-543-060-00	s	CORE
FB208	1-543-060-00	s	CORE

FB209	1-543-060-00	s	CORE
-------	--------------	---	------

IC651	8-759-937-00	s	MB3759 (FUJITSU)
-------	--------------	---	------------------

⚠	L101	1-421-848-11	s	LINE FILTER
---	------	--------------	---	-------------

L201	1-421-849-11	s	CHOKE, 2.4mH
L203	1-408-316-00	s	CHOKE
L204	1-421-850-11	s	CHOKE, 12
L205	1-421-329-00	s	CHOKE

Ref No.	Parts No.	SP	Description
---------	-----------	----	-------------

Q101	8-729-901-72	s	2SC3317
Q102	8-729-901-72	s	2SC3317
Q103	8-729-100-13	s	2SC2001
Q104	8-729-100-13	s	2SC2001
Q201	8-729-600-27	s	2SC2603-F

Q202	8-729-117-54	s	2SA1175-F
------	--------------	---	-----------

R101	1-214-947-00	s	METAL 2.7M 1% 1/2W
------	--------------	---	--------------------

⚠	R102	1-205-715-11	s	CEMENT 3.3 5% 5W
---	------	--------------	---	------------------

R103	1-246-529-00	s	CARBON 220k 5% 1/4W
R104	1-246-529-00	s	CARBON 220k 5% 1/4W

⚠	R105	1-212-934-00	s	METAL 1 5% 1/2W
---	------	--------------	---	-----------------

R106	1-247-107-00	s	NF CARBON 100 5% 1/5W
R107	1-246-529-00	s	CARBON 220k 5% 1/4W
R108	1-246-529-00	s	CARBON 220k 5% 1/4W

⚠	R109	1-212-934-00	s	METAL 1 5% 1/2W
---	------	--------------	---	-----------------

R110	1-247-107-00	s	NF CARBON 100 5% 1/4W
------	--------------	---	-----------------------

⚠	R111	1-205-715-00	s	CEMENT 3.3 5% 5W
	R201	1-206-475-00	s	METAL 33 5% 2W

R202	1-535-369-00	s	SHUNT
------	--------------	---	-------

⚠	R203	1-213-151-00	s	METAL 4.7k 5% 5W
---	------	--------------	---	------------------

R204	1-247-131-00	s	NF CARBON 1k 5% 1/4W
------	--------------	---	----------------------

R205	1-247-143-00	s	NF CARBON 3.3k 5% 1/4W
R206	1-249-455-11	s	NF CARBON 4.7k 5% 1/4W
R207	1-247-139-00	s	NF CARBON 2.2k 5% 1/4W
R208	1-247-123-00	s	NF CARBON 470 5% 1/4W
R209	1-247-115-00	s	NF CARBON 220 5% 1/4W

R212	1-247-224-00	s	NF CARBON 220 5% 1/2W
R651	1-249-425-11	s	NF CARBON 4.7k 5% 1/6W

RV651	1-228-644-00	s	VAR, METAL 1k 0.3W
-------	--------------	---	--------------------

⚠	T101	1-448-423-11	s	CONVERTER
	T102	1-437-120-00	s	DRIVE

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

VA-57 BOARD

A-6711-820-A o MOUNTED CIRCUIT BOARD, VA-57

C1	1-161-021-11	s	CERAMIC	0.047	10%	25V
C2	1-124-499-11	s	ELECT	1	20%	50V
C3	1-161-021-11	s	CERAMIC	0.047	10%	25V
C4	1-124-499-11	s	ELECT	1	20%	50V
C5	1-161-021-11	s	CERAMIC	0.047	10%	25V

C7	1-162-209-31	s	CERAMIC	27PF	5%	50V
C8	1-162-209-31	s	CERAMIC	27PF	5%	50V
C9	1-161-379-00	s	CERAMIC	0.01	30%	16V
C11	1-161-021-11	s	CERAMIC	0.047	10%	25V
C13	1-161-021-11	s	CERAMIC	0.047	10%	25V

C14	1-161-021-11	s	CERAMIC	0.047	10%	25V
C15	1-161-379-00	s	CERAMIC	0.01	30%	16V
C17	1-161-379-00	s	CERAMIC	0.01	30%	16V
C18	1-161-379-00	s	CERAMIC	0.01	30%	16V
C19	1-161-379-00	s	CERAMIC	0.01	30%	16V

C21	1-162-288-31	s	CERAMIC	330PF	10%	50V
C22	1-162-282-31	s	CERAMIC	100PF	10%	50V
C23	1-161-379-00	s	CERAMIC	0.01	30%	16V
C24	1-161-021-11	s	CERAMIC	0.047	10%	25V
C25	1-161-379-00	s	CERAMIC	0.01	30%	16V

C26	1-107-090-00	s	MICA	160P	5%	50V
C27	1-107-090-00	s	MICA	160P	5%	50V
C28	1-161-021-11	s	CERAMIC	0.047	10%	25V
C29	1-161-055-11	s	CERAMIC	0.022	10%	25V
C30	1-161-021-11	s	CERAMIC	0.047	10%	25V

C31	1-161-379-00	s	CERAMIC	0.01	30%	16V
C33	1-161-021-11	s	CERAMIC	0.047	10%	25V
C34	1-161-379-00	s	CERAMIC	0.01	30%	16V
C35	1-161-379-00	s	CERAMIC	0.01	30%	16V
C37	1-162-198-31	s	CERAMIC	8.2PF	10%	50V

C38	1-162-198-31	s	CERAMIC	8.2PF	10%	50V
C101	1-161-379-00	s	CERAMIC	0.01	30%	16V
C102	1-162-283-31	s	CERAMIC	120PF	10%	50V
C103	1-109-548-00	s	MICA	360PF	5%	50V
C105	1-109-542-00	s	MICA	220P	5%	50V

C106	1-109-540-00	s	MICA	180P	5%	50V
C107	1-162-217-31	s	CERAMIC	56PF	5%	50V
C108	1-107-087-00	s	MICA	120P	5%	50V
C111	1-161-021-11	s	CERAMIC	0.047	10%	25V
C113	1-162-284-31	s	CERAMIC	150PF	10%	50V

C114	1-161-379-00	s	CERAMIC	0.01	30%	16V
C115	1-161-021-11	s	CERAMIC	0.047	10%	25V
C118	1-162-209-31	s	CERAMIC	27PF	5%	50V
C123	1-161-055-11	s	CERAMIC	0.022	10%	25V
C124	1-162-215-31	s	CERAMIC	47PF	5%	50V

C128	1-161-379-00	s	CERAMIC	0.01	30%	16V
C129	1-161-021-11	s	CERAMIC	0.047	10%	25V
C131	1-161-021-11	s	CERAMIC	0.047	10%	25V
C133	1-161-021-11	s	CERAMIC	0.047	10%	25V
C139	1-162-205-31	s	CERAMIC	18PF	5%	50V

C201	1-109-549-00	s	MICA	390P	5%	50V
C202	1-161-379-00	s	CERAMIC	0.01	30%	16V
C203	1-109-539-00	s	MICA	150P	5%	50V
C204	1-161-021-11	s	CERAMIC	0.047	10%	25V
C206	1-161-021-11	s	CERAMIC	0.047	10%	25V

Ref No. Parts No. SP Description

C208	1-161-379-00	s	CERAMIC	0.01	30%	16V
C209	1-161-379-00	s	CERAMIC	0.01	30%	16V
C210	1-161-021-11	s	CERAMIC	0.047	10%	25V
C218	1-162-282-31	s	CERAMIC	100PF	10%	50V
C219	1-131-344-00	s	ELECT	0.33	10%	25V

C223	1-162-294-31	s	CERAMIC	0.001	10%	50V
C224	1-131-344-00	s	ELECT	0.33	10%	25V
C226	1-161-021-11	s	CERAMIC	0.047	10%	25V
C228	1-162-281-31	s	CERAMIC	91PF	10%	50V
C233	1-161-379-00	s	CERAMIC	0.01	30%	16V

C234	1-162-282-31	s	CERAMIC	100PF	10%	50V
C235	1-161-021-11	s	CERAMIC	0.047	10%	25V
C237	1-161-021-11	s	CERAMIC	0.047	10%	25V
C239	1-161-379-00	s	CERAMIC	0.01	30%	16V
C241	1-162-289-31	s	CERAMIC	390PF	10%	50V

C242	1-162-290-31	s	CERAMIC	470PF	10%	50V
C243	1-162-289-31	s	CERAMIC	390PF	10%	50V
C245	1-161-379-00	s	CERAMIC	0.01	30%	16V
C249	1-131-404-00	s	ELECT	0.22	10%	25V
C250	1-161-021-11	s	CERAMIC	0.047	10%	25V

C256	1-161-021-11	s	CERAMIC	0.047	10%	25V
C259	1-131-361-00	s	TANTALUM	2.2	10%	16V
C263	1-161-021-11	s	CERAMIC	0.047	10%	25V
C266	1-162-205-31	s	CERAMIC	18PF	5%	50V
C267	1-161-021-11	s	CERAMIC	0.047	10%	25V

C269	1-124-499-11	s	ELECT	1	20%	50V
C303	1-161-379-00	s	CERAMIC	0.01	30%	16V
C304	1-161-379-00	s	CERAMIC	0.01	30%	16V
C305	1-161-021-11	s	CERAMIC	0.047	10%	25V
C308	1-161-021-11	s	CERAMIC	0.047	10%	25V

C310	1-161-379-00	s	CERAMIC	0.01	30%	16V
C311	1-162-205-31	s	CERAMIC	18PF	5%	50V
C312	1-162-280-31	s	CERAMIC	82PF	10%	50V
C313	1-162-282-31	s	CERAMIC	100PF	10%	50V
C315	1-109-539-00	s	MICA	150P	5%	50V

C317	1-107-086-00	s	MICA	110P	5%	50V
C318	1-161-379-00	s	CERAMIC	0.01	30%	16V
C320	1-161-379-00	s	CERAMIC	0.01	30%	16V
C901	1-162-292-31	s	CERAMIC	680PF	10%	50V
C902	1-162-292-31	s	CERAMIC	680PF	10%	50V

C907	1-162-282-31	s	CERAMIC	100PF	10%	50V
C908	1-162-282-31	s	CERAMIC	100PF	10%	50V
C919	1-162-282-31	s	CERAMIC	100PF	10%	50V
C920	1-162-282-31	s	CERAMIC	100PF	10%	50V

CN1002	1-563-356-11	s	CONNECTOR MULTI 8P "TV"
CN1003	1-563-354-11	s	BNC "VIDEO OUT"
CN1004	1-563-353-11	s	JACK, PIN (RCA) 2P "AUDIO CH-1 OUT"
CN1005	1-563-353-11	s	JACK, PIN (RCA) 2P "AUDIO CH-2 OUT"
CN1006	1-563-989-11	s	JACK, PIN (RCA) 1P "AUDIO MONITOR"

CN1007	1-563-354-11	s	BNC "EXY SYNC IN"
--------	--------------	---	-------------------

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

CV1 1-141-276-00 s TRIMMER

D1 8-719-911-19 s 1SS119
 D101 8-719-911-19 s 1SS119
 D102 8-719-911-19 s 1SS119
 D103 8-719-911-19 s 1SS119
 D203 8-719-911-19 s 1SS119

D207 8-719-911-19 s 1SS119
 D302 8-719-911-19 s 1SS119
 D303 8-719-911-19 s 1SS119
 D951 8-719-911-19 s 1SS119
 D952 8-719-200-02 s 10E-2

DL1 1-415-242-00 s 42ns
 DL2 1-415-372-11 s 63us

FL1 1-235-807-11 s HIGH PASS
 FL2 1-235-808-11 s LOW PASS
 FL3 1-235-809-11 s LOW PASS
 FL4 1-235-810-11 s BAND PASS

IC1 8-751-340-10 s CX-134A (SONY)
 IC2 8-751-350-10 s CX-135 (SONY)
 IC3 8-751-880-00 s CX-188 (SONY)
 IC4 8-759-908-59 s CX-859 (SONY)
 IC5 8-759-001-16 s MC10116L (MITSUBISHI)

IC6 8-759-200-60 s TA7060AP (TOSHIBA)
 IC7 8-759-240-01 s TC4001BP (TOSHIBA)
 IC901 8-759-800-66 s LA3161 (SANYO)
 IC902 8-759-800-36 s LA3160 (SANYO)

L3 1-410-071-11 s MICRO 10MMH
 L5 1-410-071-11 s MICRO 10MMH
 L7 1-410-119-11 s MICRO 1MMH
 L211 1-410-067-21 s MICRO 4.7MMH
 L212 1-410-067-21 s MICRO 4.7MMH

L901 1-410-119-11 s MICRO 1MMH

LV2 1-426-189-11 s BPT
 LV3 1-426-191-11 s BPT

Q1 8-729-800-43 s 2SK152-3
 Q2 8-729-800-43 s 2SK152-3
 Q3 8-729-600-27 s 2SC2603-G
 Q4 8-729-600-24 s 2SC403SP-51
 Q5 8-729-600-24 s 2SC403SP-51

Q7 8-729-178-55 s 2SC2785-E
 Q8 8-729-178-55 s 2SC2785-E
 Q9 8-729-178-55 s 2SC2785-E
 Q10 8-729-117-54 s 2SA1175-K
 Q11 8-729-600-27 s 2SC2603-G

Ref No. Parts No. SP Description

Q12 8-729-201-05 s 2SC2878-B
 Q101 8-729-600-24 s 2SC403SP-51
 Q102 8-729-117-54 s 2SA1175-K
 Q103 8-729-600-24 s 2SC403SP-51
 Q104 8-729-600-24 s 2SC403SP-51

Q105 8-729-600-24 s 2SC403SP-51
 Q106 8-729-600-24 s 2SC403SP-51
 Q107 8-729-600-24 s 2SC403SP-51
 Q108 8-729-600-24 s 2SC403SP-51
 Q109 8-729-600-24 s 2SC403SP-51

Q110 8-729-600-24 s 2SC403SP-51
 Q111 8-729-600-24 s 2SC403SP-51
 Q112 8-729-117-54 s 2SA1175-K
 Q113 8-729-178-55 s 2SC2785-E
 Q114 8-729-600-24 s 2SC403SP-51

Q115 8-729-600-24 s 2SC403SP-51
 Q116 8-729-600-24 s 2SC403SP-51
 Q117 8-729-600-24 s 2SC403SP-51
 Q201 8-729-600-24 s 2SC403SP-51
 Q202 8-729-600-24 s 2SC403SP-51

Q203 8-729-600-24 s 2SC403SP-51
 Q204 8-729-201-05 s 2SC2878-B
 Q205 8-729-600-24 s 2SC403SP-51
 Q207 8-729-178-55 s 2SC2785-E
 Q208 8-729-178-55 s 2SC2785-E

Q209 8-729-600-24 s 2SC403SP-51
 Q211 8-729-117-54 s 2SA1175-K
 Q212 8-729-178-55 s 2SC2785-E
 Q213 8-729-178-55 s 2SC2785-E
 Q214 8-729-201-05 s 2SC2878-B

Q303 8-729-600-27 s 2SC2603-G
 Q304 8-729-178-55 s 2SC2785-E
 Q306 8-729-600-24 s 2SC403SP-51
 Q307 8-729-201-05 s 2SC2878-B
 Q308 8-729-178-55 s 2SC2785-E

Q501 8-729-600-24 s 2SC403SP-51
 Q502 8-729-600-24 s 2SC403SP-51
 Q901 8-729-178-55 s 2SC2785-E
 Q902 8-729-178-55 s 2SC2785-E
 Q903 8-729-178-55 s 2SC2785-E

Q904 8-729-178-55 s 2SC2785-E
 Q951 8-729-117-54 s 2SA1175-K
 Q952 8-729-178-55 s 2SC2785-E

R230 1-247-838-00 s CARBON 2k 5% 1/4W

RV1 1-228-990-00 s VAR, CARBON 1k
 RV2 1-228-990-00 s VAR, CARBON 1k
 RV3 1-228-991-00 s VAR, CARBON 2.2k
 RV4 1-228-991-00 s VAR, CARBON 2.2k
 RV5 1-228-991-00 s VAR, CARBON 2.2k

RV6 1-228-991-00 s VAR, CARBON 2.2k
 RV7 1-228-990-00 s VAR, CARBON 1k
 RV8 1-228-993-00 s VAR, CARBON 4.7k
 RV9 1-228-993-00 s VAR, CARBON 4.7k
 RV10 1-228-993-00 s VAR, CARBON 4.7k

Parts that are not listed in the "reference number order list"
 are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
---------	-----------	----	-------------

RV11	1-228-995-00	s	VAR, CARBON 22k
RV12	1-228-990-00	s	VAR, CARBON 1k
RV13	1-228-996-00	s	VAR, CARBON 47k
RV501	1-228-991-00	s	VAR, CARBON 2.2k
RV901	1-228-991-00	s	VAR, CARBON 2.2k

RV902	1-228-991-00	s	VAR, CARBON 2.2k
RV903	1-228-994-00	s	VAR, CARBON 10k
RV904	1-228-994-00	s	VAR, CARBON 10k

T1	1-426-018-00	s	AF
T2	1-426-018-00	s	AF

X1	1-527-376-00	s	CRYSTAL, 3.579545MHZ
----	--------------	---	----------------------

Ref No.	Parts No.	SP	Description
---------	-----------	----	-------------

FRAME

A-6709-603-A	s	HEAD DRUM ASSY, DUH-37B-R
A-6709-560-A	s	UPPER DRUM ASSY, DUR-37-R

1-413-248-11	s	SWITCHING REGULATOR UR-14
--------------	---	---------------------------

CN1001	1-551-188-XX	s	CORD, AC
--------	--------------	---	----------

CN1002	1-563-356-11	s	CONNECTOR, MULTI 8P "TV"
CN1003	1-563-354-11	s	BNC "VIDEO OUT"
CN1004	1-563-353-11	s	JACK, PIN (RCA) 2P

CN1005	1-563-353-11	s	JACK, PIN (RCA) 2P
			"AUDIO CH-1 OUT"
CN1006	1-563-989-11	s	JACK, PIN (RCA) 1P

			"AUDIO CH-2 OUT"
CN1011	1-507-312-00	s	RECEPTACLE 10P "RF MOD"
CN1012	1-507-410-00	s	RECEPTACLE (F TYPE) "RF OUT"
CN1014	1-563-355-11	s	JACK "REMOTE"

CS1001	1-586-633-00	s	CONDENSATION SENSOR
--------	--------------	---	---------------------

PM1001	1-454-415-11	s	SOLENOID, PLUNGER 12V 9.5/52 OHM
			"TAKE-UP IDLER"

PM1002	1-454-417-31	s	SOLENOID, PLUNGER 12V 12/90 OHM
			"TAKE-UP BRAKE"

PM1004	1-454-415-11	s	SOLENOID, PLUNGER 12V 9.5/52 OHM
			"SUPPLY IDLER"

PM1005	1-454-417-31	s	SOLENOID, PLUNGER 12V 12/90 OHM
			"SUPPLY BRAKE"

PM1007	1-454-417-31	s	SOLENOID, PLUNGER 12V 12/90 OHM
			"SEARCH"

PM1008	1-454-416-31	s	SOLENOID, PLUNGER 12V, 7/35 OHM
			"PINCH"

M1001	8-835-258-01	s	DC, BHF-1915B "CAPSTAN"
-------	--------------	---	-------------------------

M1005	8-835-179-01	s	DC, MCB2B15 "CASSETTE COMPARTMENT"
-------	--------------	---	------------------------------------

M1006	8-835-178-01	s	DC FN30-T26N1E "REEL"
-------	--------------	---	-----------------------

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
RV1004	1-237-215-11	s	VAR, CARBON 100k "TRACKING"

S1001	1-570-117-11	s	SWITCH, ROCKER "AC POWER"
	1-509-898-00	s	RECEPTACLE
	1-509-910-00	s	HOUSING, CONNECTOR (2P)
	1-561-218-00	o	CONNECTOR SOCKET, 3P
	1-561-254-00	s	CONNECTOR CONTACT
S1002	1-552-271-00	s	SWITCH, SLIDE "TIMER"

15-4. PACKING MATERIAL AND ACCESSORIES (SUPPLIED)

Parts No.	SP	Description
3-662-364-00	s	BAG, PROTECTION
3-701-630-00	s	BAG, POLYETHYLENE
3-718-355-01	o	COVER, RF
3-718-359-01	o	CUSHION (UPPER)
3-718-360-01	o	CUSHION (LOWER)
3-718-410-01	o	INDIVIDUAL CARTON
3-769-147-21	s	MANUAL, INSTRUCTION

15-5. FIXTURE

Parts No.	SP	Description
J-6001-820-A	s	DRUM ECCENTRICITY GAUGE (3)
J-6001-830-A	s	DRUM ECCENTRICITY GAUGE (2)
J-6001-840-A	s	DRUM ECCENTRICITY GAUGE (1)
J-6001-930-A	s	DRUM ECCENTRICITY GAUGE (4)
J-6009-830-A	s	FLATNESS PLATE
J-6026-240-A	s	ADJUSTMENT DRIVER
J-6130-010-A	s	REEL TABLE HEIGHT CHECK BASE JIG
J-6130-020-A	s	REEL TABLE HEIGHT CHECK JIG
J-6153-020-A	s	DIHEDRAL ADJUSTMENT DRIVER
J-6150-140-A	s	ECCENTRICITY SCREWDRIVER 6 MM DIA.
J-6153-580-A	s	PINCH LEVER ADJUSTMENT JIG
Y-2031-001-0	s	CLEANING FLUID
2-034-697-00	s	CLEANING PIECE
3-702-216-01	s	BACK TENSION ADJUSTMENT JIG
7-661-018-01	s	SONY OIL
7-732-050-20	s	TENSION SCALE (50g full scale)
7-732-050-30	s	TENSION SCALE (100g full scale)
7-732-050-40	s	TENSION SCALE (200g full scale)
7-732-050-50	s	TENSION SCALE (500g full scale)
8-899-999-53	s	TORQUE MEASUREMENT TAPE
8-960-015-04	s	ALIGNMENT TAPE RR5-3 SA
9-911-053-00	s	THICKNESS GAUGE

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

